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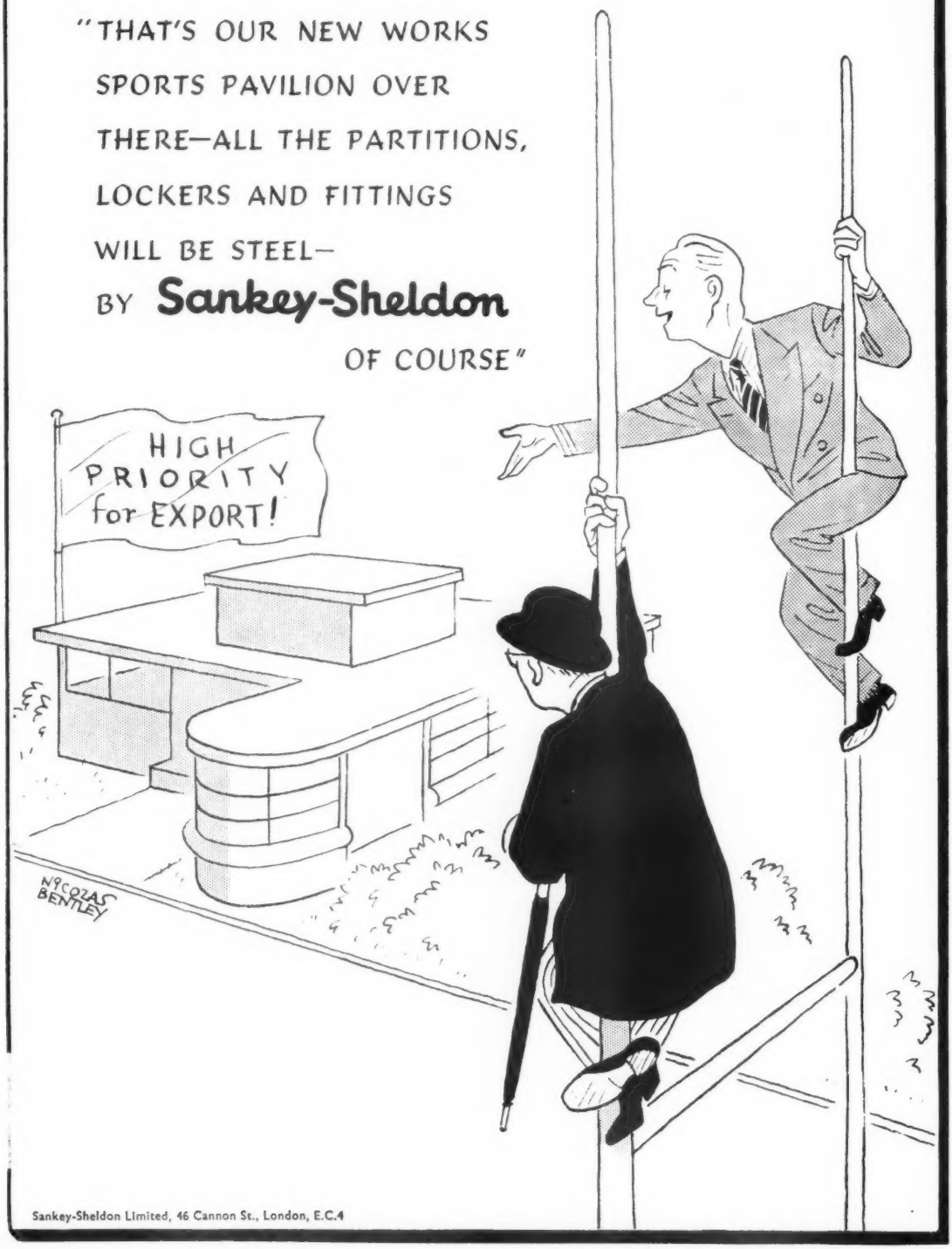

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New Honorary Associates R.I.B.A.

The Council have invited Mr. Ralph Deakin and Dr. Joan Evans to become Honorary Associates. Mr. Deakin is News Editor (Imperial and Foreign) of THE TIMES. He has made architectural photography a hobby for many years; the recent photographic exhibition of Italian Architecture at the R.I.B.A. was his work. Before becoming News Editor he was foreign correspondent in various countries where he studied and photographed architecture; the R.I.B.A. exhibition was but a small part of his great collection of architectural photographs. He is also an essayist and short story writer. Dr. Joan Evans is an Honorary Fellow of St. Hugh's College, Oxford, President of the Royal Archaeological Institute and Vice-President of the Society of Antiquaries. She is a member or corresponding member of a number of antiquarian societies at home and abroad and has written many books on medieval art and architecture in France and England. Her latest publication is *English Art* 1307-1461 which constitutes Volume V of the Oxford History of English Art.

New Honorary Corresponding Member R.I.B.A.

Mr. Hubert Schumacher, Architecte de l'Etat-Directeur of Luxembourg, has accepted the invitation of the Council to become an Honorary Corresponding Member.

Restriction on Movement of Architects and Architectural Assistants

The Council of the R.I.B.A. have considered evidence from various sources that local authorities are being encouraged to refuse to appoint persons who have served only a short period with their present employers, as a means of checking movement between authorities after only short periods of service.

The Council deprecate the irresponsible changing of employment by architects and architectural assistants but, at the same time, are opposed to any attempt to enforce unilateral restriction on freedom of movement. They point out that in the past employers have exercised their right to dismiss staffs for reasons of redundancy or economy and that now that the demand for assistants is in excess of the supply, it would be unjust and improper to prevent employees from moving to posts in which they might receive improved remuneration and conditions of service: moreover, an objectionable feature of the proposed restriction is that it tends to operate unknown to the applicant from whom the right to better his position should not be withheld.

The Council therefore take the view that there should be no restriction imposed on the freedom of movement in employment of architects and architectural assistants other than by mutually agreed periods of notice.

The Architecture of Transport

The Institute's major exhibition for 1950 will deal with the subject of Transport. It will be opened at the R.I.B.A. early in June and just before the British Architects' Conference. This subject has been chosen because it is recognized that the architect has already made a very big contribution in the design of transport buildings of various kinds as well as in the interior design of ships, airliners, etc., which it will be interesting to have an opportunity of examining. It is particularly important that at the moment when the transport industry is being completely reorganized, the contribution which, given the proper facilities, the architect can make in the future, should be fully recognized. The exhibition will deal with all forms of transport, i.e., rail, road, air and sea, and examples will be drawn from abroad as well as from this country.

Many people will remember the great interest which the Institute's Airports and Airways Exhibition created in 1937, at a time when the need for well designed airport buildings was scarcely recognized. Since that date, although tremendous technical advances have been made, the stringencies of the war period have made it impossible for anything but scant attention to be given to the proper design of all transport buildings. It is more necessary than ever that the architect should concern himself very fully with this problem.

Danish Architecture Exhibition at the R.I.B.A.

On or about 23 February and for the whole of March, the Institute will show an exhibition of 'Danish Architecture of Today' which has been organized by the Akademisk Arkitektforening of Copenhagen. There is every hope that, although somewhat smaller, it will be equal in quality to the Swiss Exhibition held in 1946. Readers will remember that early in 1947 the Institute held an exhibition of Danish domestic design and although it will be possible to include only a small amount of furniture in the forthcoming exhibition, the few examples shown will include some more recent designs in current production in Denmark.

Lady Scott

We regret to record the death of Louise, wife of Sir Giles Gilbert Scott, O.M., R.A. [*F*]. Those who were privileged to know Lady Scott will have the most pleasant recollections of a charming and endearing personality. This was most apparent to members generally, when, as wife of the Centenary President of the Royal Institute, she fulfilled so ably her important part in the many public functions of that year. Members will wish to join with us in offering sympathy to Sir Giles and his family.

Forthcoming General Meetings

On Tuesday 3 January Mr. Hope Bagenal, D.C.M. [*F*] is to give a sessional paper on *Concert Halls*. Mr. Bagenal, in addition to being the leading architectural acoustics expert in Great Britain, is consultant to the new L.C.C. South Bank Concert Hall. Since the war great advances have been made in this country in acoustics, in which research work by B.R.S. has played a leading part. Mr. Bagenal's paper should be a valuable summing-up of the knowledge on this subject which is now available to architects.

At the same meeting the Council's awards of Prizes and Studentships will be announced. The 'Prizes and Studentships evening', however, will be 7 February when the President will deliver his Address to Students and the work submitted will be criticized by Mr. E. Maxwell Fry [*F*].

On 14 February Mr. R. T. Walters [*A*] will lecture at an Architectural Science Board meeting on *Developments in Timber Technique*. Mr. Walters has been until recently architect to the Timber Development Association. On 21 February Mr. Noel Rooke will read a paper on *The Work of Lethaby, Webb and Morris*.

The President's A.B.S. Half-Crown Fund

It is never too late to give to the Architects' Benevolent Society but Christmas is a specially suitable time to do so. Members are reminded that the President's Half-Crown Appeal, announced in his letter in the November JOURNAL, is still open.

The Building Exhibition

More than 200,000 persons visited the Building Exhibition, an increase of 20 per cent over the 1947 exhibition. Against the prevalent belief that the building industry is frustrated and not fully extended, it can be said that the great majority of the 415 stand holders reported a very large volume of positive orders. We understand that many of them, in booking stands for the 1951 Building Exhibition, have asked for increased floor space. There does not seem much room for doubt that the Building Exhibition is a valuable service to the industry and that this year's exhibition was a success.

Her Majesty the Queen visited the exhibition and in the course of inspecting the stands purchased a ticket in the Tombola in aid of the Architects' Benevolent Society. We understand that the prize drawn on Her Majesty's ticket was a copy of *The Drawings of W. Curtis Green, R.A.*, autographed and presented by Mr. Curtis Green. The Tombola, though it did not fully come up to the expectations of its organizers, realized the useful sum of £545. In addition Mr. H. Greville Montgomery made a special personal donation of £50 to the funds of the Society.

Ministry of Health Housing Medals

Members will recollect that the Minister of Health announced at a conference at the Royal Institute some time ago that he was proposing to issue medals for housing estates which attained a high standard of design. The Ministry recently put forward detailed proposals which were referred by the Council to the Allied Societies' Conference for report. The Council have now decided that the Ministry's proposals should be approved in principle and that co-operation should be given in organizing the scheme. A sub-committee has been appointed to work out full details with representatives of the Ministry. The members of it are: Mr. C. H. Aslin [*F*], Mr. A. W. Kenyon [*F*] (Vice-Presidents of the R.I.B.A.), Mr. Lewis J. F. Gomme [*L*] (President, Essex, Cambridge and Hertfordshire Society of Architects).

The medal scheme provides for awards to be made annually in each region outside London for one urban scheme and one rural scheme, while in the London region there will be awards for a scheme of new development and a scheme of reconstruction. The regions referred to are the 11 administrative regions into which England and Wales are divided. It is proposed that an Awards Committee be set up in each region and that the R.I.B.A. and the Allied Societies concerned be represented on each committee.

Revised Code of Professional Practice

Following a joint recommendation of the Practice Committee and the Salaried and Official Architects' Committee, the Council have decided to revise the Code of Professional Practice. This will in future be known as the R.I.B.A. Code of Professional Conduct and copies will be sent to every member and student.

The Ministry of Education's Building Bulletin

The first of a series of Building Bulletins has been published by the Ministry of Education. The purpose of the bulletins is to give guidance to education authorities on school building problems in a manner which is less formal than regulations and circulars and which will reach a wider audience than official letters. The first bulletin, just issued, reviews the requirements of the primary school as a whole, showing what is needed educationally in terms of space, fittings, furniture, heating, lighting and general amenities. An important aim is the raising of standards with reduction in cost. Although written before the recent revision of Regulations 6, 7 and 8 and the issue of Circular 209, the bulletin is generally up to date, but a page of points to be noted, following the revision, has been attached to the bulletin after it was printed. There is little doubt that architects who wish to keep themselves abreast of school design today, as well as pay due regard to the Ministry's attitude, should buy and study the bulletins as they appear. They should be of value to lay members of education committees as well. The Building Bulletin is published by H.M. Stationery Office, price 1s.

Sir Patrick Abercrombie

The Gold Medal of the American Institute of Architects, the highest honour the Institute can bestow, has been awarded this year to Sir Patrick Abercrombie [*F*]. In announcing the award, which was made by a unanimous vote, Mr. Ralph Walker, President of the A.I.A., said that it was made in recognition of Sir Patrick's distinguished contribution to the profession of architecture and regional planning. By his teaching and the publication of numerous books on city and urban planning Sir Patrick has exerted an influence far beyond the confines of the British Isles.

The Gold Medal will be presented at the ceremony following the annual dinner held in connection with the 82nd A.I.A. Convention in Washington on 10-13 May 1950.

New Permanent Headquarters for Television

The B.B.C. announce that they have decided to develop their 13 acres White City site in two stages. Mr. Graham Dawbarn, C.B.E., M.A. [*F*], has been appointed architect for the first stage, in association with Mr. M. T. Tudsbery, C.B.E., M.I.C.E., the Corporation's Civil Engineer. The appointment has been made from names put forward by the President R.I.B.A. Mr. Howard Robertson, A.R.A., M.C. [*F*], and Professor W. G. Holford, M.A. [*F*], have consented to act as architectural advisers to the B.B.C. in connection with the project.

Regional Joint Production Committees

The National Consultative Council of the Building and Civil Engineering Industries have approved proposals made by the Ministry of Works for reorganizing and improving the advisory services which are sponsored regionally by the Ministry. The proposals have been considered in draft form by the Royal Institute and representatives are now being appointed to serve on each of the 11 regional joint production committees.

R.I.B.A. Diary

MONDAY 2 JANUARY, WEDNESDAY 4 JANUARY, FRIDAY 6 JANUARY at 3 P.M. each day. Christmas Holiday Lectures for Children. R. E. Enthoven, A.A.Dip. [*F*] *Pillars of the Past*.

TUESDAY 3 JANUARY 6 P.M. Announcement of Award of Prizes and Studentships. *Concert Halls*. Hope Bagenal, D.C.M.[*F*].

Second Thoughts on Planning

By The Hon. Lionel Brett, M.A [*A*]

Read before the Royal Institute of British Architects, 15 November 1949
The President in the Chair

AS ONE WHOSE first thoughts on town and country planning were really very recent, I feel some embarrassment in venturing to express any second thoughts at all. I do so in the belief that what I am going to say is not merely eccentric, but is representative of a movement of opinion which people concerned with planning ought now to take into account.

Some people think that to diverge at all from the orthodoxies of modern architecture and modern planning is irresponsible and dangerous. Revolutions have to hunt heresy if they are to survive, and it is arguable that our techniques are too immature to be able to stand disparagement, particularly from within. There is a real danger, for instance, that modern architecture, which is in its formative phase and needs above everything a long period of peace and quiet in which to develop and refine its language, could be diverted into a backwater like Art Nouveau by too much whimsy and the influence of fashionable painters. There is a similar possibility that planning control, for which architects were the chief fighters, will be repudiated by architects at the very moment when it has at last received legal sanction. Sabotage, diversionism, heresy. Is this political jargon applicable to the arts? It is because I believe profoundly that it is not, that the arts are sailboats which must quiver to every wind that blows, that I pursue this subject.

I hope that I may be allowed to leave this vague expression, 'Planning', as it stands for the moment, although I shall only be touching on very limited aspects of it. A great deal of it, of course, is not an art at all, and on these aspects—economic, sociological, administrative—the architect is only entitled to speak as an observer. The visual implications, of course, concern him the most closely, but as one of the godparents to the whole movement he has a right which I think he should exercise to keep an eye on the child's general development and to make tiresome pronouncements at intervals.

We must, to begin with, seriously concern ourselves with the unpopularity of planners. As is well known, a good deal of this is due to mere misunderstanding, or if you like to bad public relations. When we read in our newspapers that 'the planners' propose to carry a by-pass across a beautiful reach of river, to obliterate a downland hamlet or to take hundreds more agricultural acres for New Towns, we are rightly indignant that the well-meaning planner, striving to do what is best for all, should be pilloried—whether from ignorance of his role or from political prejudice—as if he were a pre-war speculative builder. That is an elementary, or it may be a deliberate, misunderstanding of the whole purpose of the Planning Act, which will in time no doubt be worn down by the Crown Film Unit and the B.B.C. But there are, I think, deeper causes. Even those who appreciate that the planner's business is to arbitrate between rival land uses in the interests of the community as a whole like him no better. Judgments of Solomon do not make for popularity, and they are particularly resented when there is an element of doubt about the capabilities of the judge.

Now we can attack this embarrassing subject from various angles. We can discuss the qualifications of the ideal planner—and no doubt the official committee which is doing so has concluded that they are so vast as to be unattainable by a single individual. Or we can discuss the democratization of planning—planning from the grass roots as Lilienthal called it. What I propose to do this evening is to discuss the limitations of planning control, because I believe that it is as valuable for a new technique to realize its limitations as to realize its capabilities.

One of the odd things about physical planning is that it is not, in the medieval sense, a mystery. The common man, who would hesitate to condemn shell concrete or M. & B.693, is always ready for a crack at Belisha beacons or terrace houses. The planner, like the architect, needs to know a little about a lot of things, but unlike the architect his guardian angel is not beauty but common sense—a much more familiar and approachable character. Woe betide him therefore if he affects to clothe what the common man quite rightly suspects of being a common-sense decision in any kind of mysterious verbiage. The planner, like the politician, should be no superman but a representative; more useful to him than any number of letters after his name is a sense of the complexity and value of things as they are. 'After all what *is* the present', said Virginia Woolf; 'half of it is the past, and the better half too, I should say.' A sense of history, a sense of locality, a sense of personality—in a word the perfectly common sense which ordinary people possess and which is outraged by the ideologies of the insensitive, the cocksure and the immature. I put this modesty first in no defeatist spirit, but because the planner's greatest limitation is the solidity of what exists, the strength of habit and the shortness of life. The man who bends to these facts is the less likely to be broken by them.

If all this seems the merest platitude one should remember how much effort of brilliant minds has been devoted to making pretty patterns of ideal cities which are of their nature unrealizable. There was a quite recent plan for London, the work of men of great intelligence, in which the only existing buildings retained were, as far as I remember, the Tower of London, St. Paul's, The British Museum, and the government buildings in Whitehall. The argument for this type of intellectual exercise is that like a record-breaking car it improves the performance of the standard model. On the other hand a good deal of the unpopularity of planners is because they are suspected of having at the back of their minds airy visions, shapes of things to come, a glass and chromium metropolis which nobody wants. The public will not bow to the judgment of a Solomon who is believed to have an unbalanced passion for clover-leaf crossings or community centres. I am inclined to think that if one-half of the energy which has gone into the creation of ideal forms had been devoted instead to the education of the citizen in the basic purposes of planning we would all be better off. For this reason posterity will, I believe, rate David Lilienthal of the T.V.A. higher than Le Corbusier of the Ville Radieuse in the field of activity I am discussing.

The expression 'community centre', which crept in just now, brings me to another sphere in which the limitations of planning are worth considering. I refer to the planning of social life, a business which would have been considered a contradiction in terms in any other period but our own. Here, of course, we architects speak as outsiders, or if you like as philistines, and should show a decent humility. We owe more than we can say to the great students of social dynamics like Geddes and Mumford, and to contemporary social surveyors without whom our knowledge of our unseen clients' requirements would be even hazier than it is. All the same, there are limits, and they are worth exploring. I quote from a recent American report:

'The orientation of front entrances within court groups has considerable influence on friendship formation. We find that people who live in houses which are rotated so that they face the street rather than the court have fewer friends in the court than do residents of other houses. Indeed, these

families . . . seem to have fewer friends and less social life in general.'

This, of course, is only a beginning. The next stage is to express this element as a 'friendship formation factor' or FFF: one more in the bewildering and evergrowing sets of initials with which one feels it necessary to be familiar. George Orwell, in his terrifying vision of 1984, notes that the use of telescoped words and phrases has become characteristic of the early decades of the 20th century, particularly in totalitarian countries, and that they are extraordinarily effective as antidotes to thought. Planners especially should be on their guard against that kind of pseudo-scientific jargon in which a house becomes a dwelling unit, a parlour becomes a living space, and a suburb goes up in the world and becomes a neighbourhood unit. I chose an American example just now because a great deal of our sociological jargon comes from there. That is natural enough. A young society is bound to be socially self-conscious, and to think hard about how to change and improve a structure which is not yet fixed and firm. But things are different here. How many well-intentioned plans have foundered on the obstinate determination of the Englishman to erect shacks in his back garden, to live in his kitchen, and to boycott cycle tracks. 'Whoever will reform a nation,' said Sir Joshua Reynolds, 'will not accomplish his purpose by going directly against the stream of their prejudices.'

We ought, I think, to look at these prejudices more closely, as they are of the greatest significance. At the moment one's general impression is that they are anti-social. We find resistances to terrace houses, to flats, to shared open spaces, and to the removal of lonely and socially moribund agricultural settlements. We conclude that the English are congenitally uncooperative and ungregarious. But if we look back a hundred years, or even fifty, what do we find? A drift to the towns, where life was intensely matey though squalid, and above all a stolid resistance to the healthy if draughty puritanism of the Garden City reformers. The grubby sociability of the slums seemed just as awkward an obstacle to our predecessors as the snooty isolationism of the suburbs seems to us. I wonder if it often occurs to planners that it is not the public who keep changing their minds, but they themselves. Mr. F. J. Osborn and M. Le Corbusier can not both be right, and it is conceivable that they may both be wrong. Certainly we should not be surprised if the public shows little enthusiasm for either, but jogs along unless disturbed down a *via media* to which no slogans are applicable.

My chief complaint against social planning is, therefore, that it keeps changing its emphasis. The raw material, namely the human family, remains the same all through, and the astonishing thing is the infinite variety of ways in which it is induced to live, move and have its being. It will be said that we are obliged to emphasize those aspects which were neglected by our predecessors—that our present attempts at social integration, for instance, are in answer to the social disintegration of the pre-war housing estate—which itself was an attempt to break up the anthill slum. And so on back and forth swings the dreary pendulum, and some people firmly believe that the clock can only be kept going this way.

Fortunately, civilization with its deep roots and infinite complexity has a momentum of its own. It has, if you like, an organic existence to which the mechanical analogy I have just used is quite inapplicable. To remind oneself of this one should visit one of its oldest centres. Perugia, shall we say, or Aix-en-Provence, and from a café table watch a social life which nobody has ever planned. From this return to the England of 1949 and sympathize with a Social Development Officer trying to organize a cultural centre.

Just as social life has this mysterious and elusive basis, so, it is generally held, has visual beauty. We are bound therefore to look critically at any system of organizing, controlling or censoring the appearance of buildings. The machinery for doing this, which has been written into the Planning Act, is not just another bit of 1945 socialism. It dates, oddly enough, from the golden age, or should we say the chromium-plated age, of private enterprise, and to understand it we must understand its origin. It is, I surmise, closely related with Georgian poetry and folk music, and is part of the great middlebrow conspiracy of the age of jazz to conceal its own vulgarity. We must resist here the temptation of every generation to decry its predecessor. A book like Unwin's *Town Planning in Practice*, which is a perfect example of the conspiracy, has had and still has a great and beneficent influence on urban design, as one was reminded when listening to Mr. Gibberd's recent paper on the three-dimensional aspects of housing layout. But these smocks and crinolines, those gingerbread houses with their wavy ridge-lines! That was the architectural Never Never Land at the back of the minds of those who founded the C.P.R.E., challenged the Beast and the Octopus, the pylon and the petrol pump, and whose victory was sealed by the Planning Act of 1947.

The power which they had long demanded and have thus obtained was never visualized in the hands of flat roofers and modernists. It was a very decent homespun kind of authority that was envisaged, as befitted the England of Stanley Baldwin rather than that of Stafford Cripps. Trajan lettering for shop fascias, dark green paint for petrol pumps, and above all 'local materials' were the watchwords, and it was never baldly stated, though it was certainly implied, that the neo-Georgian style would guarantee a pass. I don't suppose anyone imagined that a resistance movement would materialize, least of all in the architectural profession itself.

The resistance came in the first place from those same modernists and flat-roofers, who found the first heralds of the architectural spring unceremoniously stamped upon by district councillors, respected local colleagues, retired colonels and justices of the peace. Under the pre-war planning system, modern architects found themselves involved in pitched battles about æsthetics with local worthies, often with the embarrassing feeling that their clients had no real stomach for the fight. Splendid English compromises were put forward. If you wanted white walls you must have a pitched roof, or if you insisted on a flat roof you must have brick walls. In some parts of Sussex flat roofs were allowed on the coast, pitched roofs enforced inland; and so on. That time has not dealt kindly with some of the houses that survived these struggles does not alter their futility. Less is heard of them nowadays, not because the censorship is necessarily more enlightened, but because architecture is perforce less adventurous.

Meanwhile new recruits have joined the resistance movement. The modernists of the 'thirties were fighting their own battle on a narrow front, and probably had as little sympathy as anybody else with the roadside shack, the advertisement hoarding and the commercial vulgarity against which the amenity campaign was primarily directed. Since the war a generation has emerged which actually affects to like these things, and whose complaint against the planners is not that they are too arty and whimsical but that they are too scientific and puritanical. Under fire from two sides, æsthetic control can only survive if the steady centre of architectural opinion wants it to, and that is something about which it ought, I think, to make up its mind.

That some sort of architectural discipline is necessary seems obvious enough. The best and rarest kind is, of course, the self-discipline produced by an academic education in a classic tradition. Commoner in history is the unthinking copying of accepted patterns, of which the Georgian copybooks and the village architecture of central Europe are examples. The homogeneity of past styles, such as it was (and, of course, we greatly exaggerate it), was produced in one or other of these ways. In times of æsthetic revolution, such as the 12th and 16th centuries and our own, this internal discipline breaks down, and it is only then that the question of external discipline arises. It is a question not of principle but of desperate expediency. Queen Anne's Mansions, Portland Place, Peacehaven, the Bankside Power Station, the green and black vitrolite shop front in the Georgian country town—something has to be done about these things, but something different in each case. For Queen Anne's Mansions it was a matter of height restriction; for Portland Place, the preservation of a complete composition; for Peacehaven, the control of inevitable development; for Bankside, correct zoning; for the vitrolite shop front, insistance on appropriate materials. An infinite diversity of problems, because there is no limit to the range of architectural solecism. Without further ado I am going to put up a set of principles for this business, and then argue in their favour.

First, then, let us accept an absolute control over the location of new buildings, and in town over their floor space and daylighting. So much for Queen Anne's Mansions and Bankside. Nobody pretends that this control has any positive æsthetic value, but it often has a desperately urgent negative part to play. If we quarrel with the planning authorities on this score it is not that they are too rigid, but that they are nothing like rigid enough. Their 'No' arrives too often wrapped up in 'Yes's.'

But, secondly, I do not think the designs of architects ought to be censored on æsthetic grounds by non-architects, and I hardly think it necessary to defend this principle. The difficulty here, of course, is that the profession is not yet quite closed. When it has finally become so will surely be the logical moment to lift this control, under which no self-respecting designer can be expected to work.

There are equal, although different, difficulties about the censoring of our work by other architects, and I would suggest that the only case in which this is desirable is where, as in large-scale urban development, the designers of individual buildings freely accept the control of a co-ordinating architect. This is simply teamwork, without which in contemporary conditions we shall achieve very little.

We come now to a far more difficult question—how to deal with the great mass of small buildings, and often more important small alterations, which are not carried out by architects at all. We all want to see this great mass shrink, but meanwhile what should we do with it? From my own experience of the control of this kind of work I have come to dislike it a great deal. I do not like stripping off the honest vulgarity of Builder A; I like still less the smug Georgian of Builder B, who has been there before and knows what architects like. I find that cleaning up other people's elevations is a thankless task which usually produces something only a little less ugly and very much less alive than the original. Moreover, I do not see how we can preach visual education one day and practice visual censorship the next. Or rather I see how we can, and that there is no more rapid route to the nazification of our art. If we are aiming at a visually educated democracy there is only one way, and that is to teach people to use their eyes and then accept their judgment however much we disapprove of it. With power goes responsibility, and if we bestow the first we must not withhold the second.

These seem to me strong arguments, and to combat them I have felt obliged to have recourse to visual evidence. (*Here some slides were shown, illustrating different aspects of the problem of aesthetic control.*) The impact of these examples is more than I think we can resist at the moment. I say 'at the moment' because we must hope that people are learning. Meanwhile there must be power to say 'No,' and the problem is how to limit this power so that it does not stunt the growth of a new style. I think the clue is to be found in the listing of outstanding buildings now being carried out by the Ministry of Town and Country Planning. These will in any case be protected from insensitive alteration. Among them, no doubt, will be all surviving 18th and early 19th century terraces of any distinction. To them should be added as protected groups such notable examples of mixed street architecture as are to be found, for example, at Kings Lynn, Burford, Chichester, Blandford, Bewdley and most of the cathedral towns. I exclude almost every main shopping street, which have already been knocked silly by the chain stores, and almost every village, which is better left to fight its own battles without sentimental official patronage. We are left with that tiny fraction of our urban building with which we can not afford to take chances.

One is only too well aware of the difficulties, of the mummified Georgian street with those smugly discreet additions, of the fluctuations of taste which will alter the classification—though I do not think that matters. What does matter, supremely, is that such a comparatively small-scale control should be sensitively administered. Generally speaking, the panel of local architects, overworked and unpaid, has not proved the right instrument for the control of elevations on the vast scale at present necessary under the Act. For this more intimate and responsible, and far more enjoyable, task it should be much better fitted, and should be appointed and remunerated by the Planning Authority so as to obtain the best intelligence locally available. Architects responsible for new buildings in these protected streets ought, I think, to accept the authority of such a body.

It will be realized that something like 90 per cent of new buildings will be outside this control. Perhaps I should touch on three kinds which may cause particular anxiety. There is the speculative builder. Now, of course, no building estate should go up without an architect. That is as may be. Meanwhile there is the strongest evidence that the mere control of elevations by the local planning authority can do nothing to raise the quality of housing design. Secondly, there is rural England, the 'unspoilt' village. Æsthetic control here normally takes the form of insistence on the use of local materials and of inconspicuous colour. Shape, which is so much more important, is not affected. Now this use of quiet colours and of so-called local materials, which in fact are very seldom available, is by no means necessarily desirable in itself, nor does it prevent bad building; it can only camouflage it. Thirdly, there is the outrageous shop-front. I feel less certain about this, as so often it is not a bit of self-expression by the small man but of exploitation of the small man by specialist producers of flash façades. I still feel, however, that so long as protection is given in the special cases already referred to it is better that we should accept commercial vulgarity in the ordinary undistinguished shopping street than impose decency at the cost of life and colour.

Even the limited degree of control I have put forward will, of course, be too much for some people. It will certainly be too little for others. One must ask both sides whether they really prefer a vast blanket of æsthetic control, which is manifestly too generalized and slapdash to stop the philistine, yet too insensitive to speak the same language as the trained designer.

The way this question of æsthetic control has so far been handled is typical of a lack of refinement in the whole planning machine, which is naturally enough its outstanding characteristic at the moment. Development control is ready enough to chase the small man around, but quails before the big man, particularly if he is backed by the Board of Trade, the Ministry of Fuel and Power, or the War Office. It is of the nature of physical planning that its failures should be more spectacular than its successes. Still, making every allowance for this, it is a grievous disappointment to find the regional machinery so weak, to find London, for instance, still growing in spite of the categorical decision taken in 1944 to stop its further growth, and growing in its old haphazard way. If on appeal to the highest authority hydro-electric stations and pipe lines are to be allowed to industrialize Snowdonia, cement works to dominate the Peak, and the Isle of Purbeck to be turned into a desert by obsolete weapons of war, the plain architect, financially innocent as he tends to be, begins to wonder what is gained by all those forms he fills up. There have been since the war a depressing number of projects which have had to be palliated by assurance that the elevations will be designed by a distinguished architect and approved by the Royal Fine Art Commission—a danger signal which nearly always means that somebody is flouting the elementary rules of industrial or rural zoning.

It is no use being a perfectionist in an ironical world. We all know that some of our blue prints for the post-war world were a little rose-tinted (if I may be allowed to mix my colours); all the same it is a little bitter to find the bluff so promptly called by the business man, the industrialist, the statutory undertaker and the rest of the hard-headed world. The planner, barking at the heels of the Forestry Commission and the pampered exporting industries, has been found to have very little bite. Perhaps the moment has come to summarize the reasons why.

The planner suffers more than anything because in a world of increasing specialization he is the one official generalizer. At any public enquiry the rest of the expert evidence is technical enough to impress the inspector, let alone the public, but 'sound planning principles' are no sooner enunciated on one side than they are contradicted from the other. As against the man who can state that a thing is *technically impossible* the planner can often only say that it is *injurious to amenity*—a milk and water statement in all conscience. Undoubtedly the remedy for this state of affairs will be found in increasing specialization inside the planning profession. This is only another way of saying that the

planner must recognize his limitations and try to operate inside them. It is not for him to cross swords indiscriminately with the forester on ecology, with the industrialist on production costs, and with the architect on design. But he can and eventually must specialize either in landscape or in economic planning or in social development or in urban design so that he can talk the expert's language while standing clear of the expert's commitments.

The essential thing is still to stand clear, to retain the long view both backward and forward. And let us not try to disguise our preconception with appearances. Nothing is more irritating to the technician than a camouflaged æsthete talking pidgin-science. Most people respect our concern with beauty very much more than we realize, sometimes more than we want them to. They can not understand why we insist on talking about function and efficiency when they want us to talk about looks. We should not hesitate to pontificate in the sphere expected of us.

But one final qualification. Planning is still cluttered up with visual vested interests in a way that architecture no longer is. The philosophy of functionalism, by which architecture came to terms with science, is not yet understood by some of the theorists of physical planning. That preoccupation with the 18th century, which at one time dominated the thoughts and weakened the influence of architects, is at the back of their minds still. It sees England in terms of picturesque villages with low ceilings, of bosky woodland with isolated clumps of trees, and of neat compact towns full of terrace houses and cobblestones. All these things are just the opposite of what current techniques make possible and contemporary people want. They are in other words alarmingly unfunctional. The 18th century landscapists who assimilated the enclosure movement, and the 19th century engineers who assimilated iron and steel, have not been followed in our day by a philosophy of town and country planning which can assimilate the pylon and the combine, the lone house and the holiday camp, the monstrous hangar and the forester's straight-stemmed plantation.

Of course it is conceivable that this binding together of diverse experience, which is the function of art, is beginning to be beyond our powers as planners. I can not help feeling sometimes, in trying to design little houses and streets right alongside a great airfield upon which supersonic aircraft whine and roar all day, that here are two fundamentally irreconcilable worlds: the world of home and personal relations and the nightmare world of contemporary science. Perhaps Le Corbusier and Mumford, attempting as had their predecessors to bring technics into the grasp of art, were attempting what has become impossible. Perhaps a rift is opening in our civilization which can only be closed by events quite beyond the scope of a paper on town planning. These are speculations which if we want to build anything we had best leave well alone. After all the test pilot is quite happy spending half his life in a polished aluminium shell and the other half in a fake Elizabethan saloon bar. So why worry? The best we can do is not to talk pretentiously as if a binding philosophy existed, not to interfere more than we must with spontaneous processes and above all to concentrate our minds in spite of every distraction on the creation of beauty on however humble a scale we are permitted to operate. After a period unique in the history of architecture for largeness of talk and meanness of building, it is very necessary that we alter our focus. Mr. Summerson, writing of John Wood's universally admired work at Bath, makes this comment. 'The Bath scheme was empirical, an affair of continuous extemporization. Wood can not have looked further ahead than the particular piece of ground where his men were at work.' Perhaps E. M. Forster has expressed as well as anyone the limitations of planning. 'Life is full of false clues,' he says, 'and signposts that lead nowhere. With infinite effort we nerve ourselves for a crisis that never comes. The most successful career must show a waste of strength that might have moved mountains, and the most unsuccessful is not that of the man who is taken unprepared, but of him who has prepared and is never taken.'

VOTE OF THANKS AND DISCUSSION

Professor Sir Patrick Abercrombie [*F*]: We have all listened to what is, I think, one of the most stimulating and interesting as well as lively and amusing papers which we have heard on planning, although I must confess that to me its general tone, in spite of its enlivenment and wit, is pessimistic. I have come to the conclusion that Mr. Brett has enlarged upon several aspects of planning, which are the most difficult and least satisfactory for which solutions have to be found.

In the first instance where I think we are still groping for a solution is in relation to the unpopularity of planning. Earlier resistance to planning was inevitable. Planners tried to break up that system or philosophy of *laissez-faire* during the 19th century which, I think, should more justly be called a state of commercial, industrial and topographic anarchy. (By 'anarchy' I mean the freedom of the individual to do what he thinks irrespective of any general considerations.) In trying to impose some discipline on that complete freedom the planner became unpopular. We have possibly been somewhat too dictatorial in our attempts to impose some discipline over that complete freedom of doing what you like.

The other aspect of planning to which Mr. Brett devoted quite half of his paper is the equally difficult and unpopular task of trying to create some sort of discipline or control (one hates that word 'control') in design; there we are up against another form of anarchy, the anarchy of the individual artist. The architect, in so far as he is an artist, is an anarch. An artist does not brook control if he is a real and true artist. On the other hand we know that the architect is in a position different from that of other artists because he has to satisfy a client; so we get that inevitable dichotomy. We have on the one hand the pure artists who are allergic to control, and on the other hand we have those who have to submit to the requirements of the private client, who is rapidly disappearing, and whose place is being taken by the social client, the public. That very difficult position creates uneasiness among architects and makes us resent this discipline which—as Mr. Brett has pointed out—is necessary in certain places.

It is difficult to distinguish, as Mr. Brett has attempted to do, between where it is necessary to exercise control and where it is not. I think he will agree that his dividing line was a distinctly nebulous one. I think he is to be thanked for having pointed out those difficulties, although I am bound to say that I do not think that his system is a very workable one because it is of such great complexity according to the different positions and types of architects. For example, I do not think you can say that the urban scene should be protected and that the village scene should be left for anyone to do with as he will.

The Council for the Preservation of Rural England is not quite so arty as Mr. Brett suggests. One of the things for which we have been working—lower buildings—the Ministry of Health have contemplated recommending in their new manual. It is an economic measure which also has an æsthetic implication.

I should like to hear Mr. Brett dilate a little more, not so much on this one aspect of the external appearance of buildings and its control, as on the extent to which the architect's sense of design enters into every aspect of planning. That, I think, is where architects can exercise a wholly beneficent influence; not to have architects saying that no architects' designs must be criticized by anybody else, but the infusion of a sense of design in the most remote and unexpected directions. I do not think that there is anything connected with such things as railways, roads, sewage schemes, water supply and electric power which has not its direct architectural or æsthetic aspect, and we want architects in at the beginning of every one of those aspects of planning. I think that is a fundamental contribution which architects can make to planning, and one which the public will welcome because it does bring in the architect's special contribution.

When listening to the paper I had a feeling towards the end that Mr. Brett was himself almost getting back to the principle of *laissez-faire*. He quoted Summerson's description of the Bath Scheme by John Wood, and it was very nearly a case of piecemeal development (however good) without a general plan. Of course, that may work if there are no criminals. If everybody observed the moral law we should not need policemen or law courts, and it is an ideal at which one would like to aim; but for a long time to come there will be hooligans and rogues, and I think that they have to be controlled in some way or another. I agree

that the æsthetic hooligan is the most difficult to discipline.

One sometimes wonders whether these great planning schemes are of any value whatever. I think perhaps I might be accused of being one of those who consistently tries to lead horses to the water only to watch them refrain from drinking! Very often those horses appear to be more like mules, whether local authorities or not. Yet there *is* something in what we do.

Some time ago I was accosted by a North country alderman, who said: 'Can we go below your belt!' I said: 'I do not know what you mean; I do not wear a belt'! He proceeded to inform me that some years ago I had prescribed a smoke belt in his city, and pointed out that the houses built below that smoke belt would be less healthy to live in than those above it. He then went on to say that they had built up all the land above the smoke belt within the city boundary, and he now wanted to know whether they could go below the belt in the next housing scheme. I pointed out that the answer was not to go below the belt unless the smoke problem had been solved (it was worse apparently), and I said: 'Go outside the city boundary and do not keep all your housing within it. Do not go below the belt, but confer with your neighbours and decide which is the best place for some outside development.' He replied that they wanted the green belt preserved by their neighbours! The town-planner is unpopular and has to be unpopular.

We have to stick to our guns, and we have to be bold, but not doctrinaire. We have also to avoid many pitfalls which the author has very wisely pointed out to us, and into which we are in danger of falling. I refer particularly to the maintaining and retaining of outworn æstheticism; this is a real danger and comes continually into the control of architecture. The people in charge of it grow old themselves and continue to think of what they liked in their youth.

In spite of my criticism of the somewhat pessimistic views or outlook expressed in this paper, I hope that it will be read very carefully. It is a great thing to have a thoughtful architect writing for us on the subject of town planning, and I have the greatest pleasure in proposing a hearty vote of thanks to Mr. Brett.

Sir Stephen Tallents [*Hon. A*]: It is a double pleasure to be invited to second this vote of thanks, firstly because the proposer is Sir Patrick Abercrombie, who has carried out town planning in most of the countries of the world, and also because we have listened to what I feel has been a finely modest and finely sensitive address with a good background behind it. It is also such a relief always to listen to an address given in good plain English instead of in that jargon with which I think planning, as well as other sciences, is associated.

There are two points in the paper with which perhaps I might deal. The first is to say how strongly I endorse what Mr. Brett said about the importance of public education in this field. He stated that if one-half of the energy which has gone into the creation of ideal forms had been devoted instead to the education of the citizen in the basic purposes of planning, we would all be better off. I believe that to be true, and that probably the most vital thing to be done in the planning world today is to make alive to the public the essential importance of it. There, surely, is a field in which this profession of yours should take the lead.

In my time I have had a good deal of experience of getting across to the public the truth about different subjects, and I have always felt that there is much behind the saying: 'It is the artist alone in whose hands truth becomes impressive. . . .' I believe that to be true, and I feel that architects should be in the forefront in educating the public in that field.

The other point is this. Mr. Brett proposed, if I understood him correctly, limitations on planning process. I am a little apprehensive myself, having spent my life in administration, of the vast machinery which I see growing up, not only in this field, but certainly in the execution and administration of planning. I have seen this happen in the field of scientific research where too many scientific research workers have been tempted away to administration; I have seen it in the documentary film world where many good film makers have been taken off and made administrators; it seems to me that there is a danger in the planning world of those capable of planning and of artistic work being dragged away to serve long hours on committees, and so forth, when they would be better employed on actual architectural work or design.

I used to carry with me the simple little statements that the man who can make a mousetrap and make it effective is more important than the man who goes out organizing tiger shoots. That, I think, applies to this tendency for people to be taken off their real work to do administrative work.

So I come back to the words with which I opened, and urge you to express your thanks to the speaker for the admirable address which he has given us. It is a long time since I heard anything on this subject in the way in which it has been dealt with this evening, and it gave me greater pleasure for its modesty and quality.

Mr. S. L. G. Beaufoy [*F*]: The Ministry of Town and Country Planning: I should like to support this vote of thanks and to say, not on behalf of the Ministry, for I have no mandate, although I know I am echoing the views of my colleagues, that we in the Ministry are very glad that we have Mr. Brett designing one of our new towns. The little we have seen of him has not been enough, but we know that he brings to this problem a deep understanding of what, for want of a better term, I would call civic architecture, and which is today seriously lacking.

Architects have, for far too long I think, been given to the design of their own individual buildings. This problem is exercising the mind of my Ministry very much, and we have to do two or three things. The first thing is to secure the far wider employment of architects in every form of building. Secondly, it is not a question always of a building but of a group of buildings, and that is where we have a far harder task. I do most earnestly suggest that architects should, in the schools and elsewhere, devote much more of their time to this question of the grouping of buildings, because for all our science and understanding of economics, location of industry, alignment of roads and so on, you can count on the fingers of one hand, in my view, the developments by architects which are really worth going to look at in this country. That is the job not primarily of the planner but of the architect.

I have the greatest pleasure in supporting this vote of thanks. The paper has given me a great deal of fun, and I am looking forward to studying it more seriously when it appears in the JOURNAL.

Mr. G. B. Oddie [*A*]: One point seems to me to have been overlooked by all who have spoken so far, and that is because they have been discussing the question of æsthetic control in planning from a semi-theoretical point of view. Mr. Brett has given a number of examples of towns where it would be disastrous to have no control at all, and others where little control seems necessary. He instanced the case of one or two market towns in which he said it would be a pity to control the building, because those which existed already were so charming because of their diversity. But that withholding of direct control is, in a measure, control itself; that is to say, it is controlling the person and then saying, 'You can put up what you like.'

What I think Mr. Brett overlooked was the question who is going to control the controllers? The lamentable fact which one observes in putting theories about control into practice is that far too many people—the majority I am afraid—in whose hands is held the administration of the 1947 Act are people who have little æsthetic sense, and people whose minds are bound by regulation. It is that sort of person who has got town planning control such a bad reputation. It would be a good thing if Mr. Brett's rather pessimistic views, as they seem to those who have been advocating planning, were to be allowed to hold until such time as that visual education about which he spoke had spread, if not to the general public, at least as far as the controllers.

Mr. D. W. Plumstead [*A*]: I should like to bring a little lighter tone into the rather pessimistic colour, particularly as regards the question of architectural control.

From my own experience as a planning officer I have found that this control of architecture can work. For example, there was a building extension in Edinburgh which was put before the planning committee, and it was realized that this extension would form one side of a courtyard which was to become a very important development in that scheme. There were

two architects, who at the same time were proceeding with their designs quite independently of one another, yet quite obviously there was a necessity for co-ordination between the one architect and the other in order to get some sense of unity of design which was essential for this courtyard.

We brought those two architects together, and without any attempt at dictation from myself or from the committee, they got together and reconciled their respective problems and produced a very good design giving the unity which that courtyard definitely required. If those architects had not been brought together there would probably have been a conflict of views with very unsatisfactory results. I cite that example of where architectural control—or I should say co-ordination—was an asset rather than the contrary.

Mr. Peter Shepheard [*A*]: I should like to say a few words in defence of Mr. Brett against the charge of being a pessimist. I do so with great diffidence because all of my generation owe the greatest possible debt to Sir Patrick Abercrombie. If anyone is an optimist, surely it is the man who is prepared to leave the villages and the country in the hands of chance? If anyone is to be a rash optimist, surely it is one who will cheerfully deliver the control of architectural design into the hands of people who have nothing after their names but the letters M.T.P.I.

I think that it is very important to remember that control is carried out by people who are, on the whole, not to do the thing themselves. I do not see how in a country faced with a great building programme which will tax the capacities of all the architects to the limit there will be enough left over of the very superior kind who must do controlling. Control will be exercised in the end by those who are not capable of doing it.

It also seems necessary, I think, in all arguments about control to warn people about three kinds of control which are possible, two of which, in my opinion, are necessary, and the third quite beside the point. One is the control which is aimed at attaining a creative design. That, as has been said, is not really control at all. The second kind of control is preserving. That must be exercised with the idea of preserving those things which are worth preserving, that is to say, unities of design. I would include some of the villages of the countryside, although not many in that category. The third kind of control is concerned with vulgarity, or that which people think is vulgarity, by people who are not really qualified to do it.

Mr. A. M. Chitty [*F*]: In some of our most beautiful but small-scale towns certain ugly buildings are themselves worthy of preservation as well as the beautiful ones which are, perhaps, 200 years older. So often one finds that the character of a main street in a town, where the scale is predominantly two or three storey, is dependent upon contrast and not only upon isolated buildings. Often the less worthy buildings of the 1870's and 1880's are a foil and a necessary counterpart to the older and more beautiful buildings. That only serves, I think, to underline the fact that this question of preservation and of control is very difficult for any planning officer to carry out satisfactorily.

As to Mr. Brett's talk, it was, I think, very comforting in many respects. If anything, I felt that he underestimated the more hidden dangers which confront us, the danger, for instance, to which Sir Stephen Tallents referred, of the size of the organization which one sees rapidly overwhelming planning bodies to the exclusion of planning problems.

The second great danger, which, I think, is a very serious one indeed, is the one to which Mr. Justice Denning referred the other day, namely, the unlimited extension of powers of the executive very often to second or third hand which is resulting in much damage to the individual. We read a few days ago of the case in Kent of the little man who wanted to put up a greenhouse on his piece of land in which to grow tomatoes. He was prohibited from so doing, not because he had no licence or for any structural reason, but simply because of planning. The Ministry of Agriculture did not consider his land to be an economic farming unit! Moreover, on appeal to local inquiry, the Ministry concerned refused to allow their findings to be passed on by the county council to the appellant, or to send a witness to state their case. That, I think, everybody will agree, is an excellent example of the danger of these powers being passed over our heads and administered at second hand.

The Hon. Lionel Brett: I do not think that I can deal individually with the very interesting discussion which has taken place, because there were not in fact many questions. I should, however, like to summarize the very wide field of agreement between myself and those who spoke after me, and to deal in passing with some of the points which were made.

I knew, of course, that I was in for trouble when I heard that Sir Patrick Abercrombie was coming! I must say that I do take it as a great compliment that he should have attacked me in the way he did! I think that for a man of his goodness and kindness of heart that is a compliment indeed.

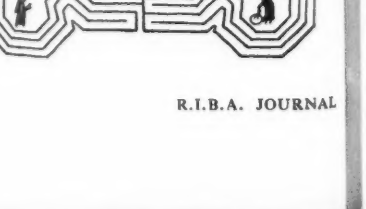
I belong to a pessimistic generation, and I was glad to find that some members of it even consider me to be an optimist! We are all, I think, less robust than were our fathers, and it is something which we ought to regret. I do not know what is coming over the world, and I wish that I had the toughness Sir Patrick has; but one can only speak from one's own experience and personality, and I can not help being worried, as I think Mr. Chitty and Mr. Shepheard were, by this tendency for inflated organization to stifle creative work in so many fields.

I rather feel that I did not make myself quite clear and, indeed, Sir Patrick pointed it out, in that I left the dividing line between control and decontrol nebulous. Perhaps I might make it perfectly clear here and now that I am, in principle, against control; but I recognize, as I think everyone must who does not like control, that there are very limited exceptions. I tried to say what they were. They amount to a small field, and they are simply a few surviving compositions which have come down to us from the past and with which we can not take a chance. I know, of course, that that field has to be surveyed and is, in fact, being surveyed. That is a matter which will require great subtlety and sensitivity, but it is being done and should be continued.

It has been suggested that the co-ordination of large-scale development is essential, and I did, of course, say so. As Mr. Shepheard said, where several hands are engaged upon it, it will not be a united composition unless there is a single co-ordinating brain; but I can not agree with what Mr. Plumstead said about the inevitable virtues of co-ordination in cases of redevelopment. It is perfectly clear that there are frightful cases of co-ordinated redevelopment, and splendid examples of un-coordinated development. One has only to think of Regent Street to realize that co-ordination is sometimes useless; and if he is talking about courtyards and suggesting that all courtyards should be controlled, I would ask him to consider the Piazza of St. Mark's, Venice. If we are in doubt I would say, no control.

Sir Patrick Abercrombie referred to lower ceiling height. Of course architects want it, but what I was concerned to point out was that it is not what the public wants. It is also true, as he said, that I am opening the door to hooligans and rogues, and, of course, one does so quite deliberately. Many of us now know something about the rogue architects of the 19th century, and would we have done without them? Should we have had them controlled and never allowed them to have their fun! I think not. I think that architecture can only remain alive as long as rogues are allowed to be what they are. It is true that they must *be* architects. I know that we can not always trust architects, but they are the best thing we have for building.

To sum up my own view of this question, I can do no better than say, with Sir Stephen Tallents, that I am for cutting down the scale of tiger shooting and perfecting our mousetraps.



Changes in Building Technique*

By R. Fitzmaurice, B.Sc., M.I.C.E., F.R.S.A. [*Hon. A*]

Read at a joint meeting of the Ministry of Works and the R.I.B.A. Architectural Science Board on 14 November 1949

Capt. C. H. Kitchin, R.M., in the Chair

Introduction. Building in most countries is one of the most conservative of industries and is highly resistant to change. Nevertheless, we have seen quite an important process of change in the lifetime of many people now working in the industry; the changes have been dictated in part by changing social conditions and habits on the part of building occupiers and in part by the inventive and creative urge of individuals in the industry itself. Great crises tend to accelerate the rate of change; we have seen in two wars how the urgent requirements of defence have revolutionized technique in other industries. In mechanical engineering, aviation and agriculture we have seen a complete transformation of technique. In the last war period even shipbuilding, where tradition had something of the sanctity which it has in building, was invaded by new production techniques. The crisis is now upon the building industry and likely to persist for a long time, and we have a duty to the nation to modify our methods where it can be shown that productivity will be increased thereby or costs decreased.

It is proposed to discuss here only those changes in technique which are aimed at reducing costs and increasing productivity. There are legions of others which are no less important and which are aimed at increasing the efficiency of building from the standpoint of the user. The changes in technique which have occurred in the public works side of the industry are excluded from these notes. The drastic transformation happened here under the stress of wartime needs and even earlier.

There still remains the question as to whether there is any need for change in building technique. Assuming that changes are possible and that they may be beneficial in that they may increase the production of buildings in terms of the unit of effort expended, whether that be man-hours or £ s. d.; surely no one can deny the importance of giving them a thorough trial. The programme in front of the industry is virtually limitless. There are the war-destroyed commercial centres of a dozen cities to be replaced, vast arrears in housing and the need for higher standards of housing, vast quantities of new school buildings to meet the increasing demands of the educational programme; new hospitals, health centres, clinics and sanatoria for the National Health Service and, over all, the increase in industrial efficiency by which we sink or swim, inevitably calls for modernization and replacement of out-of-date factories and workshops.

Change is inevitable; ingenuity and inventiveness are not likely to be less strong in the building industry than in other industries, and it is not possible to stand still. Either we go forward or backward. Opinions may sometimes differ as to the forwardness or backwardness of some of the steps we have taken in the past, but there has been a steady process of change in progress for a long time. It may be asked —where is the place in all this for a Scientific Research Unit? So far as the Ministry of Works is concerned, the object has been to set up a research organization to service the industry by recording and analysing the effects on efficiency of various changes in technique.

As a general rule, investigations into the problems of production can not be carried out in a laboratory. It is necessary to obtain the required data in factories and on building sites and to work in very close collaboration with manufacturers and builders. This immediately introduces complications because the aim of a manufacturer or builder is to make or build something and to get paid for it, and the collection of data sufficient for scientific analysis is not normally considered desirable or necessary.

For examination of the larger and more obvious variables it is possible to extract the necessary information from manufacturers' and contractors' normal records and accounts. When, however, a more detailed examination is required as, for example, to ascertain with some precision the effect of substituting a new method for a particular operation, it becomes necessary to use special observers to obtain the required information. A certain amount of this work has been carried out by observation of contracts for the erection of houses which have been made between the Ministry and contracting firms for the special purpose of studying particular systems of construction.

Other investigations, and equally satisfactory ones, have been made where contracting firms have given facilities for observers from the Ministry to obtain the information required from their current building contracts. In several cases the results have been particularly happy with the second type of arrangement. The firms concerned have found the information obtained to be of great help to them in their work, and the Ministry has benefited by seeing the day-to-day problems as they are dealt with in the builders' organization. The author is convinced that this direct partnership between the research organization and the industrial unit is a very promising one for investigations in the field of production.

Fig. 1: Trenching machine, with 10 h.p. motor

Fig. 2: Specially designed brick barrow

Whatever form the investigation takes it must be planned from the first on a statistical basis. The number of variables to be found on a building or manufacturing project is so large that their ultimate separation must depend on statistical examination. It has been found, however, when the appropriate statistical techniques have been developed, that it has been possible to reach positive conclusions from a very complex system of variables. In short we find that work of this kind calls for a research team headed by a mathematical and statistical unit to plan, to analyse and to interpret the data collected. On the industrial side, however, it is equally necessary to employ technicians with sufficient industrial experience to understand the physical form and nature of the processes which are under investigation. The mathematicians and the technicians must be welded into a team, and this is not the least of the difficulties in building up a research unit of this kind.

In order to appreciate the changes which are taking place in building technique, the reader will need a bird's-eye view of the building industry as it exists today, for in many cases a modification of technique will call for the appropriate modification in structure and organization of the industry.

The Building Industry. The construction industry as it exists in Britain embraces civil engineering and public works contractors as well as building contractors. A few of the larger firms comprise both fields of activity. This paper is confined to the

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building industry as such and excludes civil engineering and public works. The construction industry comprises about 100 large firms employing more than 500 operatives; about 1,000 firms employing 100-500 operatives; about 7,800 firms employing 20-100 operatives; about 18,000 firms employing 5-20 operatives; and a very large number indeed of one-man firms. The great majority of our new buildings are built by contractors under contract with the prospective building owners; the contracts are awarded on a basis of tenders to drawings, specifications and bills of quantities which are prepared in advance. It is important to note this procedure because it undoubtedly affects the development of building technique.

The building industry is firmly entrenched in traditional practice, and is founded upon craftsmanship. Innovations are not accepted readily, and when they fail, as they sometimes do, it does not necessarily follow that the new idea is worthless, but merely that it can not succeed under traditional methods of organization. In an industry based on craftsmanship it is not easy to envisage all the implications of a change in technique, and it is desirable to appreciate clearly what is involved in craftsmanship. Craftsmanship is defined here as skill in performing an operation by a process evolved over a long period and learnt by practical instruction from craftsmen. The essence of craftsmanship is that the craftsman needs no more than a general instruction; when he fits one component to another he does not need to be given accurate dimensions or minute instructions; he takes one component and fashions the other to fit by a well-tried and generally-recognized process. The result more often than not is æsthetically satisfying; more so very often than the hardness and regularity of the product of a mechanized production process. The essence of craftsmanship is the exploitation of a universally-recognized craft process. The fact that the process is universally recognized means that the designer need do no more than indicate his general intention. The craftsman will fill in the detail from his knowledge and experience. This saves the designer a lot of trouble. Similarly, the fact that a craft process is universally recognized implies that the organizer (the contractor) has no need to make a special study of the way to organize each piece of work. The work follows a universal pattern and, with appropriate modifications to accommodate peculiarities of each job, a standard type of organization will serve for all. This saves the contractor a lot of trouble and enables him to manage quite well without elaborate organization or highly-skilled supervision.

So long as an industry adheres firmly to craft processes the results are predictable within certain limits. Experience is a reasonably certain guide. If, however, a new process is introduced depending, for example, on rapid assembly of precision-made components, the organization which is good enough for a craft technique may be quite insufficient. The designer must learn the unfamiliar art of defining the degree of precision required in terms of the method of manufacture, and the building organizer must learn how to make real use of the potential speed of assembly of the precision-made article. The conclusion is that to make a change in technique in a craft-based industry it is necessary to make the appropriate changes in the methods of design and works organization. In the new ventures which have been developed for housing in Britain since 1945 the importance of these factors has been proved again and again. Basically-good ideas have failed because they have been handicapped by traditional design methods and by traditional organization.

Fig. 3: Typical hoist for small building projects

Fig. 4: Another type of hoist

Since changes in technique can only be assimilated slowly in a craft-based industry, it follows that the only methods of radically increasing productivity are by lowering the quality of workmanship or by an increase in the productivity of the individual worker. There is in fact an inexorable upper limit of productivity and lower limit of cost, and in Britain these limits are such that it has not been possible in the last 30 years for the building industry to provide a house at a rental within the means of the workers in the lower income groups. Low-cost housing has had to be subsidized. This is a phenomenon which has not been confined to Britain; other countries have experienced the same thing, and the author believes that in some form or other it applies to many Western European countries. The fact has, however, provided a powerful incentive to the building industry, and the industry itself has shown and is showing a degree of enterprise and invention which is very remarkable. There are hundreds of new ideas and new methods in circulation, and the advantages and disadvantages of new techniques are being studied with great enthusiasm, especially amongst the younger and more enterprising people in the industry. As already noted the Ministry of Works has attempted to provide a service for the industry in setting up a research unit to give a scientific appraisal of the value of new techniques.

In order to consider fully all the implications involved in the introduction of new techniques it is necessary to take account of the relations between the building owner, the architect, the building contractor and the operative. The building owner may call in the services of a consulting architect or, if a local authority or a large corporation, he may have an architect permanently in his employ. The architect takes his instruction from the building owner and prepares drawings, specifications and estimates of cost. He may advise the building owner at this stage to call in a surveyor who will prepare what is known as a 'bill of quantities' which consists essentially of a schedule of materials and labour in the proposed building to which prices can be attached. It is important to note that the form of this bill of quantities has evolved over a very long period and is peculiarly suited to an industry based on craftsmanship.

The schedule is summarized by trades and not by operations, so that it does not correspond with the way in which costs are built up on the building site. In essence the bill of quantities is a document which lends itself to pricing rather than costing. Selected contractors are invited to submit lump sum tenders for the work based on the drawings, specifications and bills of quantities, and the contract is normally awarded to the firm submitting the lowest tender. Sub-contracting for certain specialized operations is not uncommon. Roof coverings and certain types of floor finishing are very often sub-contracted. The important point to note is that, in theory at any rate, all essential details of the work must be decided before the contractor is appointed. This automatically

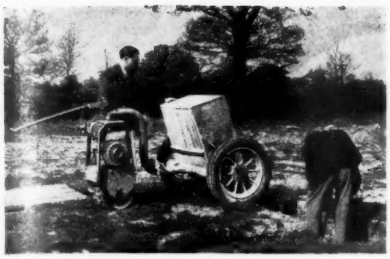

Fig. 5: Small power-driven barrow

Fig. 6: Tractor with concrete skip

Fig. 7: Tractor with hoist

rules out any possibility of close collaboration between designer and contractor at the design stage, which it can be argued is a pre-requisite for the introduction of modified techniques aimed at a serious reduction in building costs.

The organization of the work on the site is relatively simple. On the contractor's side executive responsibility rests with a general foreman, who supervises and allocates work to the operatives. General foremen are usually recruited from the ranks of skilled operatives, a fact which would be expected from the bias of the industry towards craftsmanship. The general foreman will normally be assisted by two clerks, the one acting as a timekeeper and the other as a storekeeper. Detailed control of the individual trades is exercised by working 'gangers' or leading hands. The tendency is for the work of the general foreman to become more complex. Since the war there have been many complicating factors: shortages of materials, introduction of new types of machinery, shortages of labour, unbalance of labour, application of monetary incentives, increased attention to welfare of the operatives with canteens for their feeding, transport of operatives to and from work, etc. There is a distinct possibility that the status and pay of the general foreman are not adequate for his responsibilities. In considering the application of new techniques this question of the type of supervision is most important. For any drastic change it is necessary to train the supervisors before success can be assured.

Supervision on behalf of the building owner and his architect is exercised on the site by the Clerk of Works. This individual has the responsibility of ensuring that the requirements of the specification are faithfully followed and that the quality of the work is up to the standard required. Clerks of Works are recruited in the same way as general foremen, and emphasis again is laid on craft experience. Here again there may be a need for some re-orientation to accommodate changes in technique.

The skilled operatives are classified according to their trades, and there is close demarcation of the work which is appropriate to the various trades. Entry to the skilled trades is normally by apprenticeship, and the rate of entry has in the past been controlled by agreement between operatives and employers. Certain of the skilled tradesmen have specialized labourers attached to them. Thus, for example, a bricklayer's or plasterer's labourer possesses a high degree of craft skill and knowledge. There is a pool of general labourers with no specialized craft skill who carry out such tasks as excavation and handling of materials.

To absorb new techniques into the industry it has to be realized that new types of skill are involved. It is necessary to identify the point where the true element of skill resides in a new operation so that the operative who contributes most to the result may receive recognition of the fact. In many cases the team element, which can be good for traditional techniques, is absolutely essential for the new methods. Teams need to be balanced in terms of the actual work-content of the operation, and until this balance is achieved the results will not come up to expectation. New techniques apart, there is much benefit to be obtained by care in balancing working teams for traditional methods. If, for example, mechanical handling of materials is to play its part in the future, it will be necessary to study afresh the balance of the teams and not to be tied down by shibboleths which no longer apply.

New Techniques in Building. It is relatively easy to discuss technical improvements and to obtain facts and figures to support the discussion. An over-riding problem, however, is the human factor, and it is always difficult to predict what will be the human reaction to any change which may be introduced. To close one's eyes to the importance of the human factor is to invite failure, and the author makes no apology for attempting to comment on this aspect, though at present there are no quantitative data to support the views expressed.

The Study of the Human Factor in Building Technique. A great deal of work has been done in the manufacturing industries in what has come to be termed 'scientific management of personnel'. Very important results have been obtained and a start has been made to study the application in Britain of these methods to the building industry. A large field is being opened up in the selection and vocational training of operatives and supervisors. This follows recognized methods of applied psychology. The industry has shown much interest in the subject and there can be little doubt of its importance. It is too early at present to indicate what the results are likely to be, but let us not close our eyes to the fact that in other industries it has been found to yield valuable returns in increase of productivity, whilst at the same time the individual worker finds much greater satisfaction in his work.

A great deal of work has been done during and since the war to improve the conditions of operatives on building work. It is the normal practice in sites of any magnitude to provide canteens where cooked meals can be obtained at a very modest price. Facilities are often provided for drying clothing, which is very useful in a prevalently wet climate such as that of Britain. The effect of welfare arrangements of this kind on productivity can not be stated quantitatively at the moment, but it is to be expected that it will be good. It is characteristic that a well-organized, highly productive site will be found to have good welfare arrangements.

During the war it became the practice on larger works to enlist the interest of the operatives in the management of the work. Site committees were formed at which the operatives were invited to follow progress and to make suggestions for the more efficient conduct of work. This has continued on a limited scale into housing work and is a factor which in time may contribute to higher productivity.

'Time and Motion' study has been widely applied in other industries, but up to the present it has not figured to any appreciable extent in the building industry in Britain. It tends to be suspect by operatives as a means solely of forcing the pace. It has been used extensively in experimental work carried out by the Ministry of Works in order to establish the basic work-content of new processes in order to create a balanced labour force to work them. Wisely used, it is almost indispensable as a guide to site and workshop organization, and it is very gradually finding its way into the building industry. There remains still a considerable scientific problem in correlating time and motion studies with actual productivity over long periods.

The Study of Site and Workshop Organization. Before the war conditions in the building industry in Britain were very stable. There were ample stocks of materials and a pool of labour to draw on. Organization of building operations was very simple because the work followed a well-known pattern. Since the war the supply of materials has been erratic and there has been no surplus labour. It has consequently been necessary to develop a very much higher degree of organization in order to keep work running smoothly. The preparation of a programme in the form of a schedule of operations with their estimated starting and finishing dates has become normal practice. It has been no less important to study the progress of the work very closely in terms of the programme and to keep a running record in graphical form. In this way the build-up of the labour force could be co-ordinated with the ordering and delivery of materials and with the movement of machinery and other equipment. Much ingenuity has been devoted to the production of standard methods of scheduling operations and charting progress, and these organizational aids are to be seen on the majority of up-to-date building sites.

A considerable amount of work has also been done on methods of recording current costs. In order to reduce costs of building it is necessary continuously to record and scrutinize costs. Standard methods of cost recording by separate operations have been devised and publicized, and it is true to state that cost records are now being much more widely used than was the case before the war. The payment of monetary incentives involves the measurement and recording of work done by gangs and individuals so that this can very properly be combined with a cost recording system which will show continuously the expenditure on detailed operations and enable a comparison to be made with estimated costs.

There is a general measure of agreement that an all-round improvement in organization is overdue, and a great deal is now being done on the lines indicated above. Rational systems of programming, progressing, costing, incentive bonus methods, etc. are being actively introduced. The question may well be asked: 'What is the effect on efficiency?' Can we make any quantitative assessment of progress to date? The author believes the answer to be 'yes'. Following the operational research method —which is the main theme of this paper— a pilot survey has been made of productivity in house-building in the years 1947-48. The survey was made on 165 contracts containing just over 3,000 houses. The necessary data had to be extracted from contractors' accounts by the research teams, and the author can not emphasize too strongly his appreciation of the help and encouragement which the builders gave in this work. It was a difficult operation to plan for the first time, and had the response been less generous it would have been most difficult to have brought the work to a satisfactory conclusion. It is a very good augury for the possibilities latent in a

Fig. 8: Production model of tractor and skip

Fig. 9: Light boom with travelling skip

partnership between the industry and an operational research unit.

By developing a suitable statistical technique it was possible to arrive at a firm conclusion as to the general trend of productivity over the period and as to the effect of some of the major variables. The following conclusions may be of interest. There was an improvement in productivity throughout the two years independent of the effect of incentive payments which were introduced during the period. Man-hours fell by 25 per house per month. Incentive payments reduced the number of man-hours required per house. On the average, 60 man-hours were saved for every £5 of bonus paid per house. As an example of these major effects there was a fall during 1948 of 400-500 man-hours per house, and of this 300 were saved by the general increase in productivity and 100-200 by the increase in incentives paid during the period. Inferior workmanship was *not* associated with lower man-hours. Variations in specification produced a variation of 5 per cent in cost on either side of the average—a fact which will doubtless be of particular interest to the architect.

There were many other interesting conclusions on such questions as the size of contract, the region, the amount of work sub-contracted, etc.; space does not enable them to be discussed at length here. As a general average 3,080 man-hours were required to complete a three-bedroomed house of an average size of 935 ft. super, without outbuildings. The range of variation in man-hours was found to be very wide. It varied from just below 2,000 man-hours to about 4,500 man-hours. A more detailed survey is being made of the group of contracts where the man-hours are well below the average to see whether the main factors leading to these high productivities can be identified and notified to the industry.

It will be shown at a later stage that special problems have arisen from the increased use of machinery on building sites. Where materials are handled by machinery it is necessary to make exact provision for unloading and stacking, and to organize the work so that an expensive machine is continuously employed. This calls for planning and forethought of a much higher order than when materials were mainly man-handled. There has been a tendency in the past to regard these organizational matters as the exclusive province of the contractor which only come into play when work starts on the site. A serious question arises as to whether the organizational studies should not start right back at the design stage.

Principles involved in the increased use of machinery in building. If the term 'machinery' is used in its widest sense, the object of almost every change in technique of building has been to make greater use of machinery in order to increase production and to lower cost. In Britain the process began in the period between the wars. Machines were not extensively used on smaller building sites, but many components for building of all kinds were made in factories by highly-mechanized processes. There was considerable opposition to their introduction at first, but a number of components quickly established themselves on account of their low cost and excellent quality.

There were large wood-working factories where standard doors, windows and stairs were produced in large quantities. Wooden mouldings, cupboards, etc. were also produced as standard lines, and these articles had become fairly established, virtually to the exclusion of the hand-made article, except for ultra-luxurious building. Steel windows have been very much used, and these had perforce to be standardized and produced on a larger scale. Sub-assemblies for plumbing and heating were just beginning to appear before the war and have been very strongly developed since 1939.

The public works side of the industry is outside the scope of this paper, but it should be noted in passing that there has been a complete transformation here. Where only a few years ago one saw hordes of labourers with picks, shovels and barrows, we now see only a few large machines and, apart from their drivers, hardly a human being in sight.

In considering how the use of machines is likely to develop in building, it is convenient to have a clear picture of their functions, and for convenience it is proposed to classify them in three main types. The first and most elementary family of machines are those which replace human physical effort by mechanical power. They include machines which lift and carry our materials, which excavate the soil, and which crush or mix our materials. Their use is obvious, and it is not difficult to prove or disprove in any given case whether their use is justified from the point of view of cost and effort expended. To the credit side there are important advantages in that the machines have a constant output of work, they set a uniform pace, and they are impervious to fatigue. In Britain men like to drive machines.

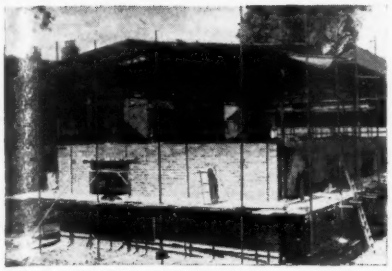

Fig. 10: Plumbing jig for walls

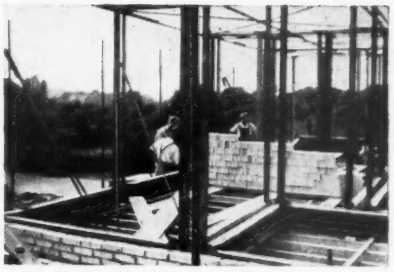

Fig. 11: Plumbing jig for walls

The next family of machines are those which shape our materials. They saw, plane, drill, tap and mould to the most complex form which may be needed. The important characteristics of this family of machines are that they work very fast, but also that they work very accurately. It becomes possible to work to much finer limits of dimensional precision than is possible by the equivalent manual process. In fact, if properly set up, the machines can not be inaccurate.

Lastly there is a family of machines which, in combination with those which shape, are enormously important. These are the machines which measure and set out work. They include jigs, gauges, profiles, moulds, etc., and their intelligent use has probably done more than anything else to transform production technique in other industries, but their use is only just beginning to be known in the building industry. By way of illustration of the application of these principles, the following are some examples of recent developments in the use of machinery.

Application of mechanized production to traditional building. Before the war on a typical housing site the foundations were always excavated by hand. Some preliminary levelling might be done by bulldozers, but the actual foundation trenches beneath the walls were hand-dug. The large trenching machines were too heavy and too costly for the small contract and did not manoeuvre sufficiently easily to negotiate the rather complex plan. A very large proportion of housing sites in Britain are on clay, and it is necessary to dig fairly deep foundation trenches in order to reach a depth where movements due to changes in moisture content of the clay will not give foundation movement. In point of fact, a change in the design of foundations as well as in the method of execution is long overdue. Small excavating machines have recently been developed to deal with house foundations and two types are shown: Fig. 1 is a modification of a large trenching machine reduced in size for digging house foundations. It is powered by a 10 h.p. engine.

Before the war the usual practice on a typical housing site was to unload the bricks and other bulky materials on the roadside. They were distributed to the craftsmen by labourers, who carried them in barrows and hods and up ladders. Since the war there have been quite a number of developments in the form of the device shown in Fig. 2. Bricks are arranged in small stacks which are picked up in specially-designed barrows of the kind shown and which can be wheeled direct to their position alongside the bricklayer at his work. A logical development of this, and one which will doubtless come in time and which is already contemplated, is for the brick manufacturer to package or stack his bricks for dispatch in suitable batches for mechanized handling in this way on the building site. Bricks are only a single illustration, but we can imagine the drawing of the kiln with mechanized aids into the appropriate batches which will not be manhandled again until the bricklayer puts them into their place in the wall. In Fig. 2 is shown the primitive development of what may be a revolutionary process of handling the heavier and bulkier materials.

Figs. 3 and 4 show typical hoists for small building projects. They have become almost universal since the war. The hoist shown in Fig. 3 is mobile and capable of being erected very quickly.

Materials were almost invariably distributed on small building sites by wheelbarrows of small capacity pushed by labourers. There are several developments of small power-driven barrows which are coming into use in some numbers, and a representative type is shown in Fig. 5. Fig. 5 was the prototype. The essence of the development of such a tool is simplicity. In this case the power unit is a small petrol motor which is connected to the driving wheels through a clutch. There is no gearbox, and the machine is reversed by turning the motor round through 180 degrees.

A word is necessary here as to the part played by the Ministry in development work of this kind. The Ministry of Works set up an organization for the development and testing of mechanical equipment for the building industry; this is known as the Field Test Unit. The process of development follows a logical pattern; an analysis is made of the actual labour employed on the various operations in building; this analysis shows where there is some likelihood of a machine being useful and the performance of the machine can be specified at that stage, including the amount of money the operation can carry if the machine is to justify itself.

The prototype machine is designed to the specification, and in order to evaluate the principle of operation prototype machines are built. They are then rigorously tested for performance and modified as necessary and then go on to building sites for a thorough field trial. Accurate data are obtained of their performance on the site with the collaboration of builders, and finally these figures are analysed and the case for or against the production of the machine is then complete. A word is necessary here to put on record the very generous response of builders in providing facilities for these field trials. They have been put to quite a lot of trouble, but their enthusiasm has been a great stimulus to the staff, who have been working on these problems.

An example of what can be done in this way is a concreting skip attached to a small agricultural tractor which has just come very successfully through a field trial. For the foundations and ground slab of a small house it is necessary to place anything from 4 to 8 cubic yards of concrete. This material is normally wheeled from the mixer in barrows to its position in the foundations, where it is tipped and spread. The output of the mixer is controlled by the rate at which the barrows can remove it, and the fresh batch can not be introduced into the mixer until all the previous mix has been removed. By designing the skip so that it is low enough to take the discharge from the mixer and big enough to take the whole batch, it is obvious that the mixer is free from the moment of discharge. The small tractor (Figs. 6 and 7), which is a standard agricultural machine slightly modified, can negotiate the roughest site and can dump the concrete right into its final position. The trial showed that the labour distributing the concrete could easily be halved, but at the same time the output of the mixer could be doubled.

For the small site it is always a problem to find continuous employment for a machine, so that it is desirable, wherever possible, to devise multi-purpose machines. The same small tractor can be fitted with a dozer blade, which enables it to be used for back-filling trenches or cleaning up piles of concrete aggregate. Fig. 7 shows it fitted with a small hoist by which means it can be used as a stacker to load an upper stage with bricks or other materials. A production model of this machine incorporating skip and dozer blade is shown in Fig. 8.

Another simple device for distributing concrete over the site of a pair of small houses is shown in Fig. 9. This consists of a light boom carrying a travelling skip. The end of the boom adjacent to the concrete mixer is fixed and the other end can be moved to cover any part of the site. In the model of this device, which is going into production, the boom will be made in aluminium alloy. The machines discussed so far are all in the first and most elementary family. A start has been made in Britain, however, in the application of the third type of machine—the jig for setting out—to traditional building.

The traditional method of building walls is to set up the corners in brick or block by means of a plumb rule, and to fill in with bricks or blocks which are laid to a line which is levelled to the joints at the corners.

In Holland, which is a country with a tradition of fine brickwork, they normally build their walls to profiles which are set up at the corners. On the information at present available there is reason to believe that productivity in bricklaying is higher in Holland than in most other European countries, and the use of the profile may be one of the factors making for this higher productivity. The idea can, however, be taken a stage further and the plumbed profiles transformed into a complete jig; there is then a possibility of speeding-up wall construction but also of producing a building carcase accurately dimensioned. This immediately opens up quite an exciting range of possibilities because precision-made assemblies of components can be introduced into an accurately-dimensioned shell. Partition units, plumbing and heating assemblies, wiring assemblies, stairs and joinery should fall into position. Second fixings could be enormously reduced. The jig is being exploited in Britain, and it may well prove that an important revolution is being introduced. It is shown in Figs. 10 and 11. The results obtained to date have been highly satisfactory both in respect of productivity and cost, but the quantitative assessment of the possibilities of the jig for general application has still to be made.

New processes of mechanized production. We have had since the war various developments in mechanized production of new components for building, as well as of complete systems of building. As an example of the production of components an interesting example is that of the prestressed concrete floor joists for houses. Britain has insufficient resources of softwoods for traditional building requirements and has depended in the past on imports from the Baltic and from North America. A considerable amount of work has been done in the production of prestressed concrete. The special study in this case has been directed to the costs of production.

It is desirable to digress a little at this stage and consider the implication of new methods of production of building components on the classical methods of design and control. One of the most potent instruments in producing the enormous amount of equipment needed to win the war was the process known as 'quality control'. This may be defined as a process by which the full rigour of control is applied at the point where it matters instead of being applied universally at all stages. The control is essentially a statistical conception but, properly applied, it yields very large economies and avoids a very large amount of waste in effort and material. Structural components for buildings have in the past been designed by classical methods, with a rational basis but none the less empirical, and a so-called 'factor of safety' has been introduced to allow for the fact that the actual strength of the component can not be predicted even under ideal conditions, and its variability under rough workshop and site conditions is liable to be excessive, and in any case is even more unpredictable. The new methods of production differ from

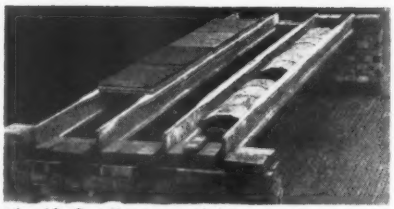

Fig. 12: Small concrete joist

the old in that, by definition, every stage is planned and the whole process is in every case rigorously controlled by the requirements of production. This means to say that the range of variability in the product is enormously reduced by comparison with traditional methods. To reduce this variability is the first stage to true economy. Another important point is that by the new methods of production each product will be made in considerable numbers over a period of time suitable for the amortization of the capital costs of the production process. Since there is a flow of production it becomes possible by a rational process of sampling of the product to establish the mean value of the essential properties as well as their variability. In this way the old conception of factors of safety piled on factors of safety disappears and the working point may be fixed in the neighbourhood of unity instead of using a factor of X3, X4 or X7. The divergence from unity will depend on the closeness of control which will narrow the range of variability of the product. The starting point must still be a design process by a proved classical method, but once the physical form of the product has taken shape the problem then becomes one of application of statistical technique by sampling to establish the mean values and the divergence from the mean.

Whatever happens, we should not lose sight of the importance of this particular advance in technique. In terms of economy in material it may often yield dramatic savings, and in economy in labour the result may be almost equally significant. The elegant small concrete joist shown in Fig. 12 did not just happen; the process described above has been taken through all its stages and, in the result, tenders have been received for commercial production at a very modest price.

The first problem was to arrive at a suitable mean strength and range of variability related to the method of control used in manufacture. Since the joists, if widely used, will be made on large-scale production where strict control of quality must be enforced, the problem became one of statistics, as described above, and the effects of the many possible variables have been explored by large-scale testing to destruction and by statistical analysis of the results. This work was done on a pilot production plant at the Field Test Unit, and the Building Research Station have given the greatest help in the interpretation of the test results. Some of the mechanical devices which needed to be developed for these studies are shown in the following figures.

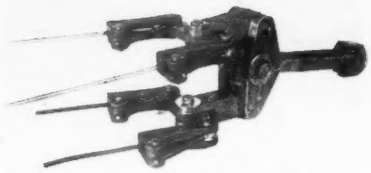

Fig. 13: Compensating grip for pre-stressing concrete

Fig. 13 shows a compensating grip to apply equal tension to four wires simultaneously. Fig. 14 shows a steel mould for casting two joists simultaneously with quick opening for demoulding. Fig. 15 shows the same mould arranged for simultaneous pressure and vibration for compacting the concrete. Fig. 16 shows the end of the bed and the jacks for applying tension to the wires.

There are two main methods of production of precast, prestressed concrete components—the long line and the individual mould method. The individual mould has many advantages from the point of view of cheapness of production, but everything depends upon the rapid development of strength in the concrete in order that the wires can be released and the mould re-used.

By experiments in pilot production on a semi-commercial scale it has been possible to obtain consistently a mean compressive strength in the concrete of 5,000 lb. per sq. in. at 4 hours with a range of variation sufficiently narrow for the requirements of production. This result has been obtained by using a rapid-hardening Portland cement, compacting by simultaneous application of pressure and vibration, and by suitable heat treatment. The result is important economically because the moulds can be used twice in the working day. The process has been highly mechanized, and in the result very low tenders have been received for the manufacture of the joists. The problem still remains to be solved of finding out as quickly as possible how the prestressed concrete joists can most efficiently be used in houses in substitution for wood. This will involve a close study of floor construction, again on the pilot scale, to acquire the necessary data on the cost of handling and fixing, and to establish the simplest and cheapest technique. This again is essentially a statistical problem and will entail accurate records over a sufficient range of sites to enable a reliable statistical assessment.

Finally, there remain to be considered the various methods which have been the subject of experiment in Britain for the erection of complete house structures. The trend of development has gone through various phases. The first types were based on the production of a framework to which an external covering might be quickly applied. A typical example of an economical steel frame is shown in Fig. 17. Several variants were also produced based on reinforced concrete frames. Few of these houses were conspicuously successful. The loading in a small house is

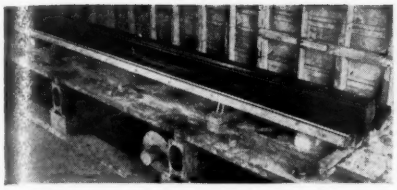

Fig. 14: Steel mould for casting two joists at once

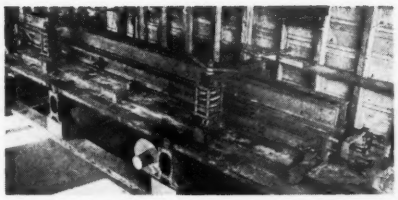

Fig. 15: Mould for simultaneous pressure and vibration for compacting concrete

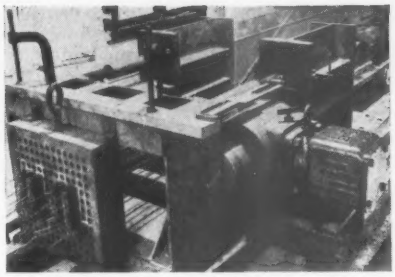

Fig. 16: Jacks for tensioning wires in pre-stressed concrete

very light, and it is difficult to design a practicable frame for such light loads. Another difficulty is that of fixing linings and other components to steel and concrete, and many of the steel frames have included wooden sub-frames for fixing purposes, so that the quantity of wood required has often been sufficient to produce a load-carrying wooden frame. By drastic economy in the use of wood it has been found possible to produce a wooden-framed house with wall and floor units made up in large panels for quick assembly. This house is shown in Fig. 18. The result is interesting because the quantity of wood required has been reduced to the very small amount normally allowed for a traditionally-built brick house.

Large precast concrete panels for wall construction have been used successfully, and a house of this type is shown in Figs. 19 and 20. The panels in this house are assembled around a tubular steel jig which is removed when the panels have been placed.

Houses with concrete walls cast 'in situ' have to be regarded as non-traditional in Britain. In these cases success depends on the design of the formwork to allow of rapid erection and dismantling. A good system of formwork will perform the function of a jig, and it should be possible to fit accurately-dimensioned components into a shell which has been built in this way. The extent to which this will prove successful has yet to be established, but a large-scale contract is just being started in Scotland at the present time based on a 'no-fines' concrete shell.

It may be convenient at this stage to look at some of the figures which are typical of the results obtained to date with new methods of house construction. For those who may wish to have fuller details, the work is described in National Building Studies, Special Report No. 4, H.M. Stationery Office, price 1*s.* net, and a supplement to this report which is now in the press. Observations of site and factory man-hours were taken for groups of not less than 50 houses, and the results have been analysed statistically. Some typical figures are shown in Table I.

To facilitate comparison of costs, figures have been included for traditional houses. It must be emphasized that all the figures can only be used subject to the reservations attached to them in the published reports. In all, eight out of the thirteen new systems of house construction examined require significantly less site labour than the traditional, i.e. Types 10, 11, 13 and 14, together with four types investigated earlier. Type 12, with the organization applied to it on that site requires significantly more site labour than the traditional. Type 8, of an earlier series, is a borderline case, and Type 5 of the earlier series is not better than the traditional house. These same eight types are also better in total labour on site and factory than the traditional house. With regard to cost, Type 13 and Types 1, 2 and 3 are cheaper than the traditional house; others have costs which range around or are slightly higher than the cost

TABLE I.—SUMMARY OF RESULTS

Description of wall construction	Factory man-hours (Walls only actual)	Site man-hours (Total per house ex ancillaries)	Prime cost (Total per house)
Light timber frame. Fibre glass insulation. Plaster-board lining. 4½ in. brick external cladding in latest houses (Type 9)	345	1,660±215	£1,020
Steel frame, external cladding of precast concrete panels. Internal lining of wood-wool (Type 10)	445	1,845±150	£1,080–£1,110
Steel frame, external walling of prefabricated panels 2-storey high, of timber framework covered partly with aluminium sheeting and partly with rendering on steel mesh (Type 11)	380	1,780±130	£1,030
No-fines concrete external walling cast in-situ in special shuttering supported by timber shoring (Type 12)	230	2,570±210	£1,105–£1,190
Large crane-handled reinforced concrete cavity units, with cast in-situ columns and beams. Internal fibre-board lining cast with units (Type 13)	405	1,090±240	£1,015–£1,110
Precast lightweight concrete posts and panels. Panels in two leaves of 2 in. each. The inner leaf finished in fibreboard. All units manhandled (Type 14)	225	1,770±200	£1,035–£1,140
Large precast concrete external wall elements just capable of being manhandled (Type 6)	300	2,320±175	£1,060–£1,120
Concrete cast in-situ, no-fines concrete external walling in special shuttering, storey height (Type 2)	260	1,875±125	£940
*Traditional (brick)	285	2,140± 95	£1,015†

NOTES: These figures are indicative only, and they should not be rigidly applied without the qualifications attached to them in the earlier Tables from which they are extracted.

* If cement bricks were used the fuel requirement would be about the same as that for Flettons.

† This figure is probably rather too low by today's standards.

of the traditional house. Type 13 provides the outstanding feature of the results. It can be cheaper in cost than the traditional house of comparable size and introduces really large economies in manpower. One reason for this is that the factory-made components are more highly finished than is the case with the other house types.

The results in labour requirements on the site for Type 4 and its slight modification, Type 14, show no significant differences. This reflects the ability of the method of observation and analysis which has resolved the problem of inter-site variation and gives results applicable to the system of construction. There is also the implication that in the case of Type 4 (or 14) no great improvement as far as labour requirements are concerned can be expected without further changes in method, and that the system as now designed has reached a stage of stability. It is also probable that examination of other types on other sites would suggest the same conclusion.

To summarize, the methodical study which has been made of house-building by new techniques has yielded results which have been disappointing in some ways, though highly significant in others. The actuating theory has been that structural components should be made to accurate dimensions in factories and that they should then be assembled on the site with a minimum of labour. In fact, the expected economies in labour have been achieved quite handsomely. The components have been made accurately, and they have been assembled quickly and easily, but, and here is the pity of it, all this ingenuity has been lavished on the main structural components—mostly the walls—and it is a matter of common knowledge that the shell of a house represents at most a third of the total cost and labour element, so that the saving has only been effective on a third of the total. Actually, the non-traditional houses have been taking just as long to finish, and sometimes longer than the traditional building, and so the effect has not been very marked. If, as we now intend to do, we completely fabricate the interiors and finishings in the factory and put the structural shell up in any suitable way, whether traditional or non-traditional, the results on the total economy may prove much more striking.

A commencement has been made in this direction in Britain. About 100 houses have been erected using the system devised by the architect G. Schindler of Zurich. Here, prefabricated and highly-finished panels comprising all interior linings and partitions are made in the factory. The framing of the panels provides formwork for a system of concrete posts and beams. The panels are assembled together on the site and the concrete is poured in the posts and beams. The external weather-resisting shell is then applied in any desired material. Photographs of houses erected in England by this system are given in Figs. 21, 22 and 23. Unfortunately, this project is just finishing at this moment, and the final assessment has not yet been made. It is proposed to carry out further experiments with factory-made, highly-finished interiors in Britain in the next year or so, and the prototype houses are now being designed. The evidence at present available points to this being the most logical and profitable line to develop. Factory-made interiors of this kind can equally well be fitted into traditional shells where built on jigs, and this may be the most important development.

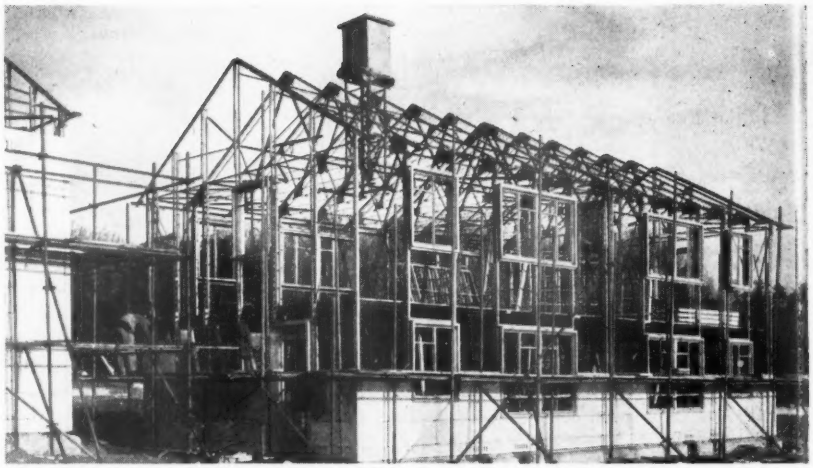

Fig. 17: Typical economical steel frame

Summary and Conclusions. An attempt has been made to describe the work done by the research organization under the author's direction; this has been set up to provide a service for the industry in determining the effects of various techniques, new and old, on productivity and cost of building. These researches have been carried out by statistical analysis of records of costs and man-hours in workshops and on sites. Sometimes the records normally kept by contractors in their ordinary run of business have been sufficient. In other cases, where more detailed information has been looked for, special observations have been made. Whichever way the work has been done it has been necessary to have the collaboration and interest of the people involved, and the author places on record his appreciation of the very generous response of the manufacturers and contractors concerned. The partnership between a research unit of this kind and firms and individuals engaged on building work can be productive of useful results and sometimes of quite outstanding results.

A considerable amount of work has been done in Britain since the end of the war on the development of new techniques for building. New ideas are being tried out in all directions. The modernization of traditional building processes is proceeding rapidly. Modern ideas of vocational training and selection of supervisors are being studied. Modern methods of programming, recording progress and costing are becoming widely applied. Mechanized handling of materials is firmly established on a scale which was unknown before the war. The introduction of an element of dimensional precision into traditional building has been studied and is the subject of experiment at the present time. It is still too early to say with any certainty what the ultimate effect will be, but the author feels very strongly that a painless transformation is proceeding very rapidly. A pilot survey was made recently of 165 housing contracts which were built during the years 1947 and 1948. When results were statistically examined the survey showed that there was an increase in productivity during the year 1948 of about 500 man-hours per house, the total man-hours falling from just over 3,200 per house to just under 2,700.

There have been important developments in the production of components for building, and complete new systems of house construction have survived the pilot development phase. The early systems consisted essentially of new ways of constructing the main house shells, finishings being by normal methods. Analysis of the results showed that this partial approach to the problem could only yield strictly limited advantages, and that the results were not so valuable as had been hoped. Work is now actively in progress on the use of fully-finished, factory-made interiors. It is too soon to form any definite conclusions, but this is clearly a line of approach which holds the greatest promise. These developments are mainly due to the enterprise and initiative of the industry itself. The industry is highly receptive of new ideas at the present time, and is conscious of the key position it holds in the national economy and is disposed to rise to the occasion.

The advance in technique is proceeding on a great many fronts simultaneously. Co-ordination between them is loose or non-existent, but it probably does not very much matter provided that systematic progress is made. The main effort up to the present has come from the contractors and manufacturers, though in many cases architects have helped in the establishment of the new techniques. This is naturally the point where it is necessary to consider

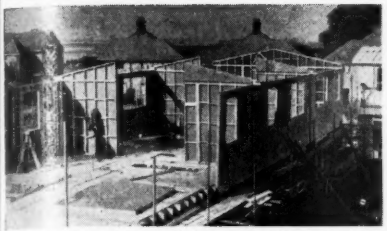

Fig. 18: Wood-framed house with wall and floor units in large panels

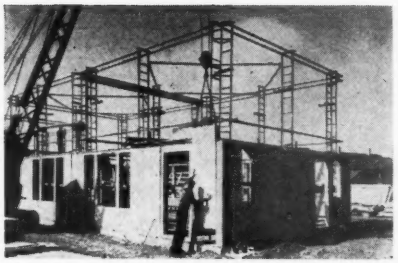

Fig. 19: Large precast concrete wall panels

Fig. 20: Later view of house shown in Fig. 19

the position of the architect in these developments. At the present time there is insufficient consideration of the potentialities of new techniques at the design stage. Sir Lancelot Keay emphasized this point, and the problem is still unresolved. The conclusion is that the designer, manufacturer and constructor have somehow or another to be brought together at the design stage and to be made to pool their experience and knowledge for the good of the job. How to achieve this is beyond the scope of this paper, but somehow or other it will be achieved. This brings us to the point that a drastic change in organization is likely to be forced on the industry by sheer weight of events.

In theory design is complete before the manufacturer or contractor ever sees it. The contractor has legitimate grounds for complaint if he has not sufficiently full particulars in the way of drawings and specifications before he tenders. By definition, therefore, the design must be carried to a high degree of completion before the contractor is appointed and, by definition, the contractor can not be consulted in the vital stages of design when the method and organization of the manufacturing and construction processes ought to be under continuous review. It is extremely difficult to see how the homogeneity which is so necessary can be achieved under existing conditions, and it is small wonder that building costs continue to rise. In other industries the designer, the production manager and sales manager work as a very closely-integrated team, usually under the general manager of the concern.

Another difficulty of the existing organization of the industry is that all questions of accountancy and payments are dealt with in terms of 'prices' and not 'costs'. To increase production and decrease costs it is necessary to focus attention on 'costs' and methods of costing. Very rightly the Ministry of Works is urging on the contractor and manufacturer the importance of a continuous review and analysis of their costs. Unfortunately, they have to maintain a parallel and duplicate set of records on a 'price' basis, and there is no means under the present organization of the industry for the architect to be joined in the paramount task of holding down costs at every stage in the work, starting from the earliest stage of design to the final completion of the job. Costs in themselves are not so important, but as a measure of the value obtained for effort expended they are absolutely vital.

DISCUSSION

Mr. C. N. Craig [*A*] said that the existing divorce between design and execution of the work was not in keeping with good building. In the engineering industry the design was carried out in the drawing office, but through the door was the actual shop where the work was put in hand. The men, whether engaged on a lathe or on the drawing board, were able to keep in close contact. That position did not, however, exist in the building industry. One possible solution was direct labour organization, as it enabled the designer and the man putting the work in hand to work together under the same roof in a spirit of competition and not enmity.

He also asked whether Mr. Fitzmaurice felt that the methods of the Burt Committee were satisfactory when, during the latter part of the war, 2,000 designs were put forward by various people for vetting by that Committee? Would it not be more satisfactory if the Ministry of Works called together the designers and planners of the non-traditional class of house and went into production of such houses in order to provide real competition and bring the costs down as we knew they could be brought down?

The so-called non-traditional class of house they had seen that evening was not really non-traditional; only the shells were non-traditional. What steps, therefore, were the Ministry of Works taking to get away from the restrictions of our bye-laws which produced such ridiculous situations as building heavy foundations for an aluminium bungalow, which only weighed four or five tons, as would take a fair-sized bus garage?

Mr. Allen [*A*] spoke of time and motion studies, which enabled one quickly to notice things which were right and wrong on a building site, and said it might pay to take the old Ministry of Supply school for time and motion study as a model, and endeavour to see whether something could not be offered to the smaller builder in the way of the lessons which motion study taught. It was certainly instructive in the organization of sites and work.

He was impressed by the fact that on the house building site materials counted for a very large part of the cost, and it was rather difficult to reduce them. On other kinds of buildings—schools, hospitals, and so on—the same ratio of work to materials might not hold. Perhaps bigger economies might be obtained by improvement in site organization, and even bigger effects produced in the architect's drawing office. An immense amount of the real economy in building lay in the decisions made on the drawing board; and there was a lot to be said for architects becoming rather acutely conscious of what they did with their pencils in the way of putting in space which would be little used as compared with space which would be much used.

Mr. Bruce Martin [*A*] asked what were Mr. Fitzmaurice's views and those of his department on the reason for the abandonment of the factory-produced housing programme and the continuation of house building along traditional lines.

Work in other fields and the data to be obtained therefrom might be of considerable relevance to the problem of housing. As an example, in round figures a house today was costing £1,500 and using approximately 3,000 man hours on the site. In other words, approximately for one pound of work two man-hours were used on the site. In his own particular school building programme, and it was one of many, for a cost of a £50,000 school the man-hours on the site were 50,000, i.e. precisely half that used in the case of house construction.

In reply **Mr. Fitzmaurice** referred to Mr. Craig's suggestion that it might be better if the Government themselves were to undertake something. At the end of the war nobody had any real basic data, but a lot of information had now been collected about the behaviour of various new methods of building, and it was perhaps possible to synthesize the results of this earlier experience and to take a chance by putting up a new method of construction which would be free of some of the disadvantages revealed in existing attempts. At the present moment the Ministries of Health and Works were working together on designs for a number of new methods of house construction which should logically have certain advantages over those which had been carried out hitherto, and it was hoped in a year or two to be able to say that (*a*) they have been beautifully successful, or (*b*) a complete washout!

Costs are unfortunately too high, and it was up to everybody in the industry to do what they can to reduce those costs. Actual costs—which term did not mean the price of things which were normally used in the building industry—should be studied methodically, because costs would not be

Fig. 21: The Schindler House

reduced or productivity increased unless actual costs were closely studied.

With regard to housing, a wealth of factual information of a rather detailed character had been collected in the last four years, enough to enable the question to be put in perspective. He did not know whether, in the case of schools, labour or materials were more important, but he thought that the issues raised by Mr. Allen were applicable to any kind of building.

With regard to standardization, a working party had been over to the United States and one of the things they recorded on return was that the high productivity in many industries in the United States was due to a process known as simplification, which was a reduction in number of different types; one felt that a very great deal should be possible in our building industry in that direction.

A great deal of work had been done by the British Standards Institution in connection with this question of simplification by standardization. It had been said by manufacturers, however, that to some extent excellent work had been vitiated by the fact that architects were not always prepared to take a standard article.

One should record the fact that simplification and reduction of numbers of types was one of the things which had undoubtedly increased productivity in the United States, and could and will increase it here; but it called for a certain amount of sacrifice on the part of the architect. It was a problem for the architect, and he had to search his soul and say: 'Am I prepared in the interests of this unfortunate person who can not afford the rent of the house today to deny myself the luxury of a little refinement in design which I would have liked but which does involve a departure from the standard?'

Temporary houses had been introduced in an emergency, and they were done at a time when supplies were in a chaotic state. At the same time, in the main the difficulties which arose in the housing programme were not primarily in the houses themselves, but in the fact that it was almost impossible to balance the production of sites with the production of houses; there were all sorts of gaps. Factories had to be started and then stopped, for if one had not the sites ready there was soon a sizeable pile of houses! The figures were given in a White Paper, and if they were analysed it would be seen that the houses themselves were extraordinarily cheap.

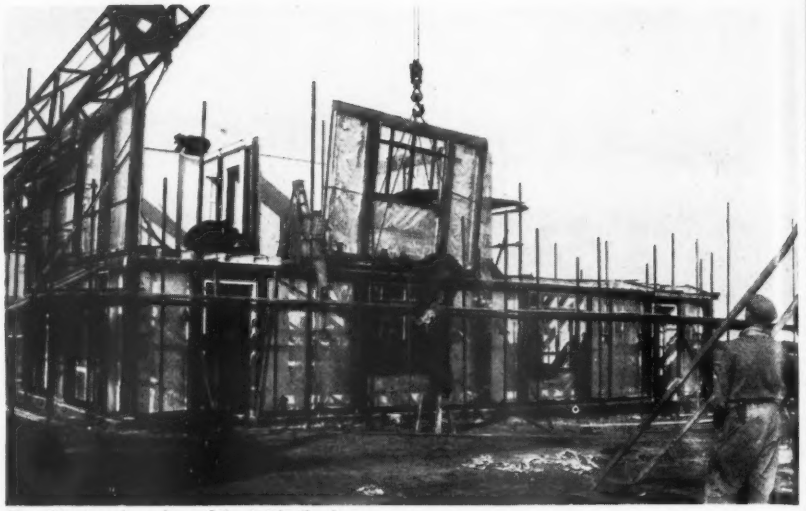

Fig. 22: Another view of the Schindler house

Fig. 23: The completed Schindler house

Without making a lengthy study he would not like to say what one should infer from what Mr. Martin had said. It might be inferred that the proportion of the amount spent on materials in the case of the school was higher because the materials themselves were of more expensive character. The figures which were published all related to houses, and he did not know of any detailed figures which were published for school construction.

On the question of indigenous materials, admittedly many of them had gone up a great deal, but in the ultimate issue the labour factor in materials was a very large item, so that we might find the labourer in brick manufacture was being paid more and that therefore the cost of bricks had gone up. Again, the cost of coal used in the manufacture of bricks had gone up because of the labour cost of taking the coal out of the ground. There was no simple picture.

If he might assume from one speaker's remarks that bye-laws were a sort of stumbling block, he would say it was a very difficult question and one which would have inevitably to be faced. The control of building by bye-laws and similar regulations was a thing which had grown up; regulations had taken their present form as a result of joint efforts between members of the industry itself. Therefore, the pattern of regulations within which we worked were undoubtedly to a large extent our own work. Even the bye-laws in their present form were shaped by a committee on which were builders, architects and engineers, so that if we complained about them, we had partly ourselves to blame.

At present we had a system which worked, and to put something else in its place we would have to go carefully or the effects might be disastrous. The regulations were framed in a fairly broad-minded way, although he was bound to admit that in the administration there were cases where petty officials took a narrow view of them. We should only get out of that difficulty as the standard of education of the people in the industry and that of the people who had to administer the bye-laws improved.

The Present and Future Supply and Demand for Architects

A Summary of the Report to the Minister of Labour and National Service by the Architects' Sub-Committee appointed by the Technical Personnel Committee of the Ministry

The Panel was set up in January 1947 with the object of inquiring into the present and future requirements, over the next five to ten years, for professionally qualified architects for building and civil engineering.

The members were: T. E. Scott [*F*], Chairman; representing the R.I.B.A., Arthur Bailey [*F*], Kenneth M. B. Cross [*F*], and A. C. Bunch [*F*]; representing the Architecture and Public Utilities Advisory Committee, G. B. J. Athoe, P. G. Fairhurst [*F*], C. D. Spragg, C. G. Stillman [*F*], and J. W. R. Adams, who was succeeded by W. J. Pickering; representing the Ministry of Works, W. A. Rutter [*F*], and L. W. Johnson; representing the Ministry of Health, M. B. Blackshaw [*A*]; representing the Ministry of Town and Country Planning, G. I. Smith, succeeded by M. F. B. Bell; representing the Colonial Office, C. H. Bradley; representing the Ministry of Labour and National Service, M. Pinto, and P. H. Brind, who was succeeded by H. F. Rossetti. E. V. Eves, of the Ministry of Labour, was Secretary.

Although the terms of reference referred specifically to professionally qualified staff it was decided to include qualified and unqualified assistants because the effective functioning of the architectural profession materially depends on an adequate supply of assistants who may not always have reached the qualified status, but who must in due course become qualified in order to use the designation 'architect', and also because it was noted that a large number of men employed in a professional capacity are by custom styled 'assistants' or 'draughtsmen', although qualified by examination.

In preparing their report the Panel studied memoranda presented by Government Departments and other bodies, including R.I.B.A. documents on the current and anticipated position of architects during the years 1947-1951, and the report of the Board of Architectural Education giving details of architectural training intake and output for the years 1947-1951.

The Demand Position. After defining the field of employment the report passes on to a consideration of the demand position, and explains that it is difficult to obtain firm estimates of the present and future demands for architects, particularly in private practice, which is the largest field of employment in the profession. Some indication of the demand was given by general statements from bodies mainly concerned.

The report summarizes the view of the R.I.B.A. by saying that the only reliable basis for estimating the future needs of the profession is to equate the number of architects to the amount of building labour available as set out in the memorandum *Architects required for the post-war period*, submitted to the Ministry of Labour and National Service and to the Ministry of Works on 7 November 1944; the conclusions reached being based on the White Paper *Training for the Building Industry* (1943) wherein a figure of 1,250,000 was set down as the maximum strength of the industry to be reached five years after the end of the war. Although the demand for assistant architects and architectural assistants of all grades is still considerable, the number of those who have qualified since the war and of those now training suggest that the present shortage is a passing phase and that there may be overcrowding in the profession in a few years' time, if the present rate of recruitment continues.

The Ministry of Health do not expect to require more than normal replacements, and the agreed post-war complement of architectural staff employed directly by the Ministry has been reached.

The Ministry of Education stated that performance has with some difficulty matched the figure of approved expenditure, the chief limiting factor being the capacity of local education authorities to prepare plans. The position has been eased somewhat by the employment of private architects, a policy that is particularly suitable for individual projects which are beyond the planned capacity of the local authority concerned; nevertheless, better use could no doubt be made of existing technical staffs.

The Ministry of Works reported an acute shortage of architectural draughtsmen; there is an immediate need for 100, and another 100 will be needed during the next ten years, to replace wastage.

The Ministry of Labour and National Service receive a considerable number of requests, from Government Departments, local authorities and private firms, for men to fill junior posts. These vacancies are difficult to fill largely because shortage of housing accommodation makes candidates unwilling to move from their home districts.

The Supply Position. On this the report states that during the war training of architects was practically suspended. Full-time students were not granted deferment of military service, and it was rare for pupils and assistants not to be called up on reaching military age. On the other hand, there has been a great increase in the number of students, since the war. The report quotes figures supplied, as follows:

Internal students taking the full-time five year course :

Year	*Entries*	*Number successful*
1931	218	165 in 1936
1932	238	177 in 1937
1933	211	164 in 1938
1934	203	(No statistics available for 1939)
1938	441	(Students were called up for
1943	598	national service, of whom 568
1949	835	were successful in 1948)

External students taking the Final Examinations leading to qualification for registration:

Year	*Entries*	*Passed*
1936	518	160
1937	561	142
1938	570	190
1939	440	167
1940	267	114
1941	172	71
1942	166	70
1943	194	68
1944	192	77
1945	287	121
1946	691	230
1947	1,015	338
1948	1,141	307

From the figures given above it is possible to compare the number of students who qualified in three pre-war years and one post-war as follows:

Year	*Internal students*	*External*	*Totals*
1936	165	160	325
1937	177	142	319
1938	164	190	354
1948	568	307	875

Thus the 1948 figures show an increase of 150 per cent over those of 1938, caused largely by the greater number of full-time students, who in 1948 were more than three times the number before the war.

The number of students attending universities and recognized schools in January 1947 and January 1949 were 3,003 and 4,597 respectively.

After making allowance for those students who will have to perform their national service immediately they have qualified, it is estimated that the numbers becoming available to the profession will be:

July 1949 ..	506
,, 1950 ..	585
,, 1951 ..	582
,, 1952 ..	594
,, 1953 ..	470

The numbers of students pursuing studies at universities, recognized schools and technical colleges in January 1947 and January 1949 are given as follows :

	Universities and R. Ss.	*Tech. Coll.*	*Totals*
Jan. 1947	3,003	1,256	4,259
,, 1949	4,597	1,839	6,436

Comparable pre-war figures for technical colleges are not available, but in the case of universities and recognized schools some comparison is possible by setting the above-quoted figures of 3,003 and 4,597 against the estimated figure of 1,100 for 1936.

An approximate estimate of the total number of students who will be finishing

their courses of study at universities, recognized schools and technical colleges is given in the following table:

	Universities and R. Ss.	*Tech. Coll.*	*Totals*
July 1949	506	158	664
„ 1950	585	274	859
„ 1951	582	438	1,020
„ 1952	594	452	1,046
„ 1953	470	517	987

Up to 31 May 1949, 6,377 awards for full and part-time study in architecture, under the Further Education and Training Scheme, were made to those whose studies were interrupted or prevented by their military or national service, but this scheme is coming to an end and professional training will then have to be gained in the way it used to be before the war.

Labour force in building and civil engineering. The report agrees that the size of the profession should be governed by the labour force employed in the two industries. Some figures are given.

	Building Craftsmen	*Others*
July 1939	490,000	430,000
Mid 1948	550,000	400,000
	Civil engineering Craftsmen	*Others*
July 1939	260,000	mainly unskilled
Mid 1948	36,000	124,000

The foregoing figures exclude unemployed persons, but it should be borne in mind that before the war there were substantial numbers of unemployed men in the two industries, whereas at present there is virtually no unemployment.

Conclusions and Recommendations. The strength of the architectural profession should, fundamentally, be related to the capacity of the building industry in labour and materials. In addition, a limited number of architects will become qualified and practise as town planners. The figures available suggest that the building and civil engineering labour force will resume pre-war proportions when the embargo on capital expenditure is lifted. At the same time, it is to be appreciated that changed conditions of employment will be found to have reduced the relative output capacity of the industry. Nevertheless, this is considered the only factor on which the future needs of the profession can reasonably be based.

Conclusion No. 1. The number of architects needed in the future may be slightly higher than before the war, and future recruitment should be adjusted accordingly.

There is at present no serious shortage of principals or architects for senior appointments, but there is a shortage of both experienced qualified assistants and junior assistants.

The numbers at present under training are sufficient, within the next five years, to make good the shortage of qualified assistants; these assistants will inevitably become experienced with the passage of time. The present rate of entry into the universities and technical colleges is considerably greater than in pre-war years and, if maintained after the present shortage has been made good, will result in the training of more men and women than the profession can economically absorb.

Recommendation No. 1. It is therefore recommended that no action is necessary to increase the present rate of entry into the architectural profession by means of full-time training in universities and technical colleges. It is further recommended that the employment position within the profession should be closely and constantly studied in order that recruitment should not seriously exceed demands, and that in any case, a tendency towards a further increase in the number of entries should be discouraged.

Conclusion No. 2. The shortage of junior assistants should become less acute as a result of deferment of the national service of pupils and assistants-in-training, and the re-employment of those who have already completed their service. These assistants are, for the most part, recruited and trained in the offices of architects in private practice. The activities of this section of the profession are, however, seriously limited in consequence of the priority given to state-controlled works undertaken by expanding central and local Government departments and similar organizations. Until and unless architects in private practice are more fully employed as a result of an increase in the availability of building labour and materials for private enterprise, or the wider use of their services on schemes for central and local government authorities, the supply of assistants of a suitable grade for appointment to official posts will remain short of the demand.

Recommendation No. 2. It is, therefore, recommended that central and local government authorities should be encouraged to make the fullest possible use of the services of architects in private practice for works which are in excess of the output capacity of their permanent establishment of architectural personnel.

The Report is published by H.M.S.O Price 6*d*.

Reorganization of the Building Centre

The Building Centre is being reorganized as a permanent national institution existing entirely for the benefit of good architecture and the encouragement of a high standard in building and equipment, its funds to be used solely in these interests. The change will be completed before 1 January 1950.

The Building Centre was formed in 1932 with the approval of the Council of the R.I.B.A. and other professional bodies and with the support of most of the trade associations and of the leading manufacturers of the Building Industry. The scheme then successfully launched was to some extent an experiment which was made possible by the work of a group of distinguished architects and builders and with the assistance of an unsecured loan by two eminent builders. It was never intended that any profits made should be distributed to interested parties, but that any surplus should be used for the furtherance in a broad sense of architecture and building. Since the war, thanks to successful management and the giving of good service to architects and the industry, the Centre is firmly established with an international reputation and a very sound financial position. All its original loans and other financial obligations have now been completely liquidated.

The new organization will carry on the activities and is taking over the assets of the Building Centre as formed in 1932. It will continue under the same name as a company limited by guarantee but with more restrictive memorandum and articles of association drawn up to comply with the Board of Trade conditions for omission of the word 'Limited' from its title.

The new institution will be governed by a Council under a President, the first being Sir Giles Gilbert Scott, O.M., R.A. [*F*], and will consist of 22 members. So that the Council shall be fully representative of all interests, provision is made that not more than 7 persons of any one calling shall sit on the Council at one time. Provision is also made for the formation of a body of members or 'Fellows' consisting of eminent persons directly or indirectly concerned with building and whose services and advice can be sought from time to time. This body will elect members to the Council as occasion arises. Members of the first Council are: D. L. Bridgwater [*F*], Sir George Burt, F.I.O.B., J. M. Easton [*F*], Mrs. Grace Lovat Fraser, John Gloag [*Hon. A*], Sidney Glyn, F.I.O.B., Dame Caroline Haslett, D.B.E., Comp. I.E.E., F. C. Hooper, Sir Alfred Hurst, K.B.E., C.B., R. T. James, M.Inst.C.E., N. C. Macnamara, M.Inst.M.E., O. P. Milne [*F*], Louis de Soissons, O.B.E., A.R.A. [*F*], T. S. Tait [*F*], J. M. Theobald, O.B.E., PP.R.I.C.S., M.I.Struct.E., Vincent E. Vincent, F.I.O.B., G. Grey Wornum [*F*], F. R. S. Yorke [*F*].

Mr. F. R. Yerbury [*Hon. A*] will continue to act as Director. It is well known among architects and the building industry that the Building Centre was virtually a creation of Mr. Yerbury's; he relinquished the post of Secretary of the Architectural Association in order to organize it. The present high standing of the Centre is a reflection of his wise guidance and organizing ability. Foreigners have not been slow to recognize the value and importance of such an organization, and similar building centres have been created in other countries including Sweden, Denmark and the Netherlands, while the daughter organization, the Scottish Building Centre in Glasgow, is flourishing.

The Building Exhibition Olympia, 1949 Part 1

Fig. 1 : The Lafarge stand

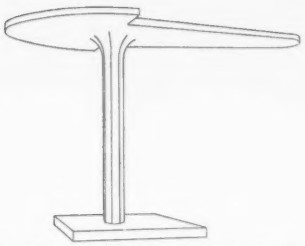

Fig. 2 : The 'body' of the Lafarge stand

Introduction: The majority of architects will have visited the Building Exhibition and made their own observations and notes. Our purpose is not to review the exhibition as a whole, nor to write about the well-known products of the many old-established firms whose names are household words in the building industry. Architects who visit the exhibition have two chief aims. The first is to find answers to their current technical problems and the second to seek for new ideas. They have inquiring minds and are always interested in new ways of solving old problems and in methods and materials which give greater freedom to their sense of design. It was, however, not always easy to find the novelties. Many firms are quite surprisingly unskilful in making their newer developments obvious to the wandering visitor. Therefore the JOURNAL staff made a special point of seeking these out and the following notes are meant to be a supplement to the architect-visitor's own search for technical novelties; he may well have missed some of them.

Forms of Construction: Certainly the most dramatic stand in the exhibition was the single column platform of the Lafarge Aluminous Cement Co., Ltd. (Fig. 1). There is nothing particularly new in its three major elements—mushroom construction, prestressed concrete and rapid-hardening cement—but their combination to form a structure which arrested the eye of the structure-conscious and rather scared the layman was a clever demonstration of modern concrete technique. Exhibition architecture can and should 'stunt' a little and the architects and designers Mr. James Holland, F.S.I.A., and Mr. P. H. G. Chamberlin [*A*], with the consulting engineers, Messrs. C. W. Glover and Partners, are to be congratulated on doing this so effectively. Further, they maintained the air of sensationalism by providing a double staircase carried entirely on continuous tubular steel handrails.

The 'body' of the stand (Fig. 2) was built of high grade prestressed concrete, employing the Freyssinnet system of post-tensioning, and was built in six days without undue haste. Shortly after the removal of the shuttering, the structure was tested to carry the heavy load of 11½ tons, as required by the authorities. An even layer of sandbags giving a load of about 120 lb. per sq. ft. or 11 tons 9 cwt. total load, was first placed; this is equal to about the weight of 153 men of 12 stones each. The sandbags were then removed from the rear or broad portion leaving the front cantilever loaded at 6 tons (or 80 men). Finally, more sandbags were removed leaving the tip of the cantilever loaded with 3 tons (40 men). This says much not only for the design but for the rapid set of the cement.

The fine polish on the soffit of the slab and on the column was achieved solely by the use of polished metal shuttering; there was no subsequent machine or hand polishing. The dimensions are interesting: the column was 17 in. diameter and the slab 16 ft. by 23 ft. 9 in., tapering from 6½ in. thick to 3 in. at the tip. The Lafarge Aluminous Cement Co., Ltd., have a leaflet giving a detailed description of the stand and its construction, which we have not space to print.

A second and no less interesting, though less dramatic, piece of construction was the stand of the London Brick Company, Ltd., which showed some of the possibilities of reinforced brickwork (Fig. 3). Designed by Messrs. George Fairweather [*F*] and R. Furneaux Jordan [*F*] and the technical and research department of the London Brick Company, the stand was surmounted by slender brick tracery which was not meant to be a practical application of reinforced brickwork but rather a demonstration of the combined use of brick and steel in the construction of beams. The tracery beams showed that reinforcement can be located in the bed joints and that there is no necessity for such devices as threading reinforcing rods through holes in bricks, as some people have supposed.

Reinforced brickwork is a neglected technique (if one excludes the reinforced brick Quetta-bond air raid shelters of the war) probably because getting a design in it approved by a local authority would be something of a major operation. The principal theoretical design rules have long been established, but no one seems willing to explore its architectural possibilities. Possibly it does not look 'natural' to the architect who is accustomed to think of brickwork as of necessity solidly based on the earth and not soaring through the air in tenuous spans. The office on the stand had a reinforced brick flat roof which showed what can be done. Perhaps someone will one day design a patterned brick ceiling of wide span in a public building and thereby scare the life out of the ignorant visitor who thinks of walls as vertical and not flat overhead.

The pressed steel door frame is now much used. It is strong enough to act as a lintel in most door openings in 4½ in. brick walls and breeze partitions up to normal storey height of 8 ft. in house construction. Where overloading occurs, e.g., floor joists built into the wall over the door head, the door frame needs some additional strength. To meet this problem Messrs. Henry Hope and Sons, Ltd., now market a loose pressed steel lintel which fits into the door frame (Fig. 4). When the wall reaches lintel height, the bricklayer merely lays the lintel along the door frame, builds in and flushes up the ends, lays a bed of mortar over and carries on with his wall. The lintel is of 16 gauge steel, galvanized and painted one coat red oxide. Holes at the ends allow the mortar to key into the steel and grip it. The lintel is made for doors of 2 ft., 2 ft. 3 in., 2 ft. 6 in., and 2 ft. 9 in. width.

There are several ways of arranging eaves gutters, and there are British Standards for them, in different materials, but most methods of forming the gutter supports and soffit need an amount of timber that can ill be spared out of the amount permitted for a house. The Finlock gutter is of interest, as it does away with practically all timber, since it is a precast concrete unit, 20¾ in. or 22 in. wide from back to front, which sits on the wall and projects 11 in. from the front face (Fig. 5). Each block is 9 in. wide on face. The units are of waterproof cement, but can be lined with bitumen and felt if additional security is desired. The unit can be had in different types to suit various conditions; it is made by the Finlock Roofing Company, Ltd., 20 St. John's Road, Tunbridge Wells.

The Elisol system of construction has for its chief point a cold bituminous solution applied to the inside faces of the external walls as the holding material for ½ in. or 1 in. cork slabs. The firm claim that as penetration of moisture is thus prevented, the walls need be only 4½ in. thick, and can be load-bearing, as under the system each storey rests on solid concrete floors, preferably with a continuous concrete lintel to tie in the tops. The U. value for ½ in. cork is given as 0.30, and for 1 in. cork 0.20. Detailed particulars may be obtained from Messrs. Elisol, Ltd., 22 Sussex Place, Slough, Bucks.

We all know how certainly-uncertain the behaviour of clay is, especially in foundations, and how often it is necessary to underpin. The Pynford system of underpinning is designed to provide a reinforced

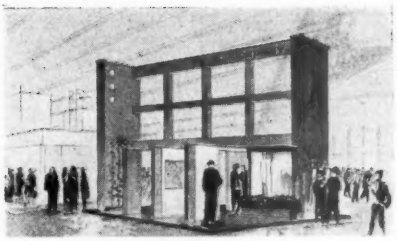

Fig. 3 : The London Brick Company's stand

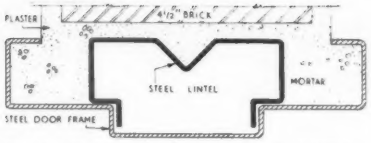

Fig. 4 : Messrs. Hope's pressed steel lintel

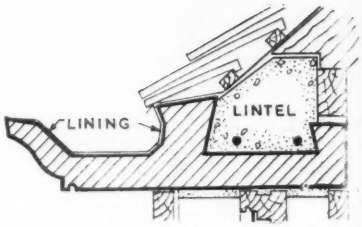

Fig. 5 : The Finlock Concrete Gutter

concrete frame to support the structure, which is temporarily upheld at roughly 3 ft. centres by special hollow concrete stools, through which reinforcing bars are threaded, concrete being poured to form the frame (Fig. 6). Piers can then be built under the frame at intervals, down to a firm bottom. A booklet can be had from Messrs. Pynford, Ltd. 77a Lancaster Road, Stroud Green, London, N.4, which will expand this necessarily short description.

The collective advice and awful warnings on the omnibus stand of the Government departments occupying one side of the Grand Hall gallery were material for many hours of study. For builders there were two comparable models of housing sites showing how to organize a housing site and how not to. Two other excellent models were of the two schemes for a new neighbourhood area and a redevelopment area which are illustrated in the new Housing Manual. How to save 20 per cent of cement in concrete while retaining the same strengths formed an interesting feature of the B.R.S. section. The secret lies in correct aggregates, adequately controlled methods of mixing and a sound technique of application. Short piled foundations for buildings on clay sites were shown; this was a demonstration with a model of a school of the system described in the November JOURNAL. A daylight cinema illustrated an aspect of the work of the Joint Fire Research Organization, namely, research into the hazards of wall and ceiling linings of inflammable material.

At the other end of the gallery was the stand of the Fire Protection Association (an attractive design by Kenneth Bayes [*A*]) which drew a constant attendance of fire-conscious visitors. This is the first appearance at the Building Exhibition of this recently-formed organization. Its booklets and reprints on such subjects as *Fire Resistance of Dwelling Houses*, *Fire Prevention Notes for Storage Buildings* and *Building Boards in Relation to Fire Protection* were in considerable demand.

Another popular educational stand was that of the Georgian Group. Here a popular exhibit was a row of Georgian houses shown in a coloured drawing on the wall. One turned a knob and the ground floor façades were replaced by a row of hideous inserted shop fronts only too typical of those that deface our older towns; one turned it again and a row of well-designed shop fronts appeared—the might-have-beens.

With so many constructional items on view at the exhibition it was to be expected that there would also be exhibits of appliances for conveying those items to the place where they are wanted, and one of them was the Mechanical Moke, which Mr. Fitzmaurice mentioned in his recent lecture at the Institute, and we must not let the alliterative colloquialism of its name detract from an appreciation of its usefulness. It is a three-wheeled barrow propelled by an engine mounted over the front (or back) wheel; this engine assembly can be rotated, and so the Moke can push or pull the barrow in any direction. The large steering wheel over the engine is ingeniously arranged to control the clutch, accelerator and brake, so control of the appliance is simplicity itself, and when the attendant lets go of the wheel the vehicle stops, in this respect resembling the animal from which it gets its name. The framework of the Moke is hung low, allowing the barrow to be loaded direct from a 10/7 mixer. A platform can be substituted for the barrow, if desired.

Another device was the Saga Junior hoist, made by the British Hoist and Crane Co., Ltd. It is powered by a 1 h.p. engine capable of lifting 2 cwt. at 60 ft. per minute, or 1½ cwt. at 110 ft.; it has three speeds and 200 ft. of wire rope, but the convenient point is that the framework is holed for attachment to tubular scaffolding. An electric motor is available as an alternative.

Materials: A paint which allows a room to be redecorated with three coats in one day and which leaves no smell is something which hotel proprietors and other building owners whose rooms should not be out of use for long, have always wanted. Silexine Plastic Emulsion Coating, on view at the stand of Silexine Paints, Ltd., is a material which, thinned with water, is its own primer, sealer, undercoat and finish. It is a hard drying yet flexible paint which can be applied directly to new cement, new plaster, brickwork, asbestos cement, though not to metal, where an anti-corrosive primer is necessary. It can be applied by brush or spray and normally dries in one hour; the next coat can be applied after three hours. It can be used either internally or exposed to weather. The paint contains no oil, which is a point of dollar importance, though it is not specially cheap to buy, its value lying more in the saving of time for contractor and building owner than in its cost in the can. At present it is made in 27 pastel shades which are brighter and cleaner than the conventional oil paints. It has very good adhesion and will even adhere well to glass and tiles, which is something of a trap for the unwary spray painter who may imagine he can wipe down glass and tiles next morning; he may have to scrape them. It should not be used on radiators or other heated surfaces as it tends to soften at temperatures above 60 degrees C., i.e., rather above hot bath heat. Resistance to abrasion is well illustrated by the fact that the makers have used it on a concrete floor in their own works where it is subject to heavy traffic and where it is standing up well. This material was shown in experimental form at the 1947 Building Exhibition where the makers called it 'Stella 1205'. Production is now in full swing and the name has been altered, as noted above.

That a building industry firm supplies stair treads for London buses says a great deal for the wearing and non-slip qualities

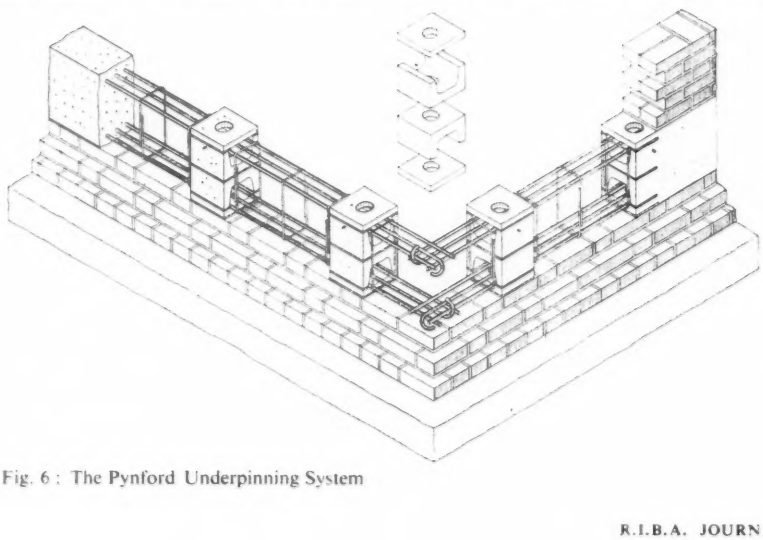

Fig. 6 : The Pynford Underpinning System

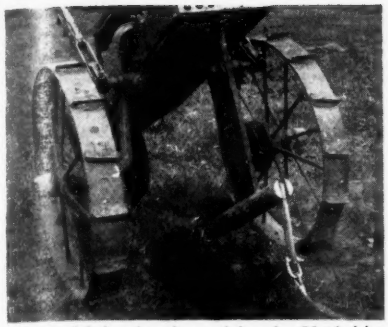

Fig. 7: Mole plough used by the Yorkshire Copper Works for laying water pipe

of the treads. The Altro Plastic Tread is made by the Adamite Company, Ltd. It is non-slip when both wet and dry, and will not creep or craze under wear. It is made in 11 colours, including white so that harmonization with colour schemes is not difficult and it is supplied in both standard and varying lengths. The Adamite Company have long made non-slip treads of high quality, but they have succeeded in making an improvement in the Altro Tread, giving it an even longer life. The material is marketed in strip and tile form. It can be screwed to a base, for which it is supplied ready drilled and countersunk for screws, or it can be stuck down with a suitable adhesive supplied by the makers to any surface such as concrete, wood and steel.

Equipment: Laying underground water supply pipes at the rate of 100 to 150 ft. a minute and without trenching sounds a wildly impossible proceeding. Nevertheless the Yorkshire Copper Works, Ltd., have succeeded in doing it in normal subsoils by the use of a mole plough. This plough is an established agricultural implement used for subsoil drainage. It consists of a ¾ in. thick steel blade, at the end of which is a solid steel 'mole' (Fig. 7) drawn by a tractor or winch and cable. A hole is dug, the mole lowered into it and haulage started. The blade cuts through the soil and subsoil and the mole makes a small tunnel or drain passage.

The Yorkshire Copper Works, Ltd., have had the bright idea of attaching lengths of soft-tempered 'Yorcalon' copper tube to the end of the mole by means of a short length of flexible cable or plaited wire tube, so that when the plough moves off the tube follows. Joints between lengths of tube are made by the well-known Yorkshire capillary fitting. Either the tractor stops for a minute or two while the joint is made or several lengths can be jointed together before hauling starts. With the latter method, lengths of 1,000 to 1,500 ft. can be run if necessary. The cost is of course a mere fraction of that of trenching, laying and filling. It might be argued that the occasional large boulder or tree root might stop the plough, but even if pulling had to stop while the obstacle was dug out by hand, this would be cheaper than trenching the whole run. The method is likely to prove of value in taking piped water supplies to outlying housing estates, farms and villages. 'Yorcalon' copper tubes conform to B.S.S. 1174 and are supplied in 30, 45 and 60 ft. coils.

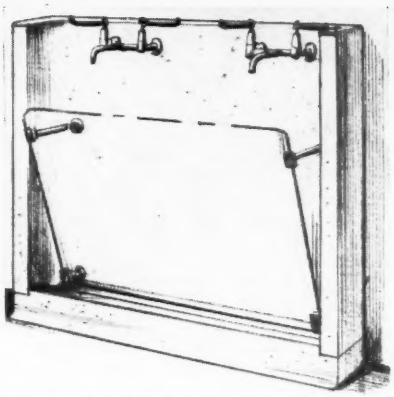

Fig. 8: Messrs. Froy's surgeon's wash-up

A new design of surgeon's wash-up for operating theatres was shown by W. N. Froy and Sons (Fig. 8). This consists of a terrazzo splash-back and drain, elbow operated taps and a sloping sheet of plate glass in front to guide the drips and splashes into a floor channel.

A new design of wash-hand basin was shown by Adamsez, Ltd. The operative word is 'hand' because the basin is very small and intended for hand washing only. It has been specified for the lavatories of the L.C.C. Concert Hall. One pattern has only a single tap. This is for use in schools and similar institutions where the water is thermostatically controlled at a temperature about 'bath heat'. This system is called 'tempered water', the idea being that provision of water at a fixed temperature suitable for hand washing halves the plumbing pipe lay-out and does away with the second tap at every basin. The system and the basins are being installed in several schools now being built by the Kent County Council.

Appliances: Under the name of the English Rose Kitchen, the C.S.A. Industries, of Warwick, showed a range of kitchen fitments all in units of the same style and height, a point being that the top of each projects forward beyond the general face of the fitment, the projection being supported by a curved portion containing drawers; thus one can get close to the working top and still have room for one's toes at the bottom of the unit.

One unit was the Hazel domestic boiler, which is housed in the cupboard portion of the fitment, while the refuelling hopper is contained in the top projecting part and is covered by a hinged cabinet top. A single knob in the rounded top controls both the air inlet and the flue damper at the same time, so that the rate of combustion is under close control. The special ash container need be emptied only every seven to 14 days, depending on the amount and the ash content of the fuel used. The various units formed an attractive combination.

Other firms making boilers had many types on their stands, most of them being improvements in outward appearance rather than in the working design, but Messrs. Flavel and Co., Ltd., of Leamington Spa, showed their Fulham finned-back boiler grate which had interesting points. The boiler at the back inclines forward and has vertical fins on its front face, the heat from the fire passing between them and behind a deflector plate. In summer, when the open fire and central heating are not wanted, a gas-fired attachment can be clipped to the boiler; by this means the warmth from the burners passes between the fins and heats the water sufficiently to give a supply for baths and so on. When the coke fire is in operation the boiler is capable of giving 250 gallons of hot water a week, and in addition will heat up to 70 sq. ft. of radiator area.

Fig. 9: Messrs. Cowper Penfold's balanced-flue space heater

The Ascot balanced-flue multipoint gas water heater has already been reviewed in the JOURNAL, but the company's research laboratory is now developing a built-in type with the front panel lying flush against the wall, and it is expected to be in production about the middle of next year.

Another use of the balanced-flue principle was shown in the space heater manufactured by Messrs. Cowper Penfold and Co., Ltd., of 6 Basil Street, Knightsbridge, S.W.3. It is called the Sapphire gas heater, and is the result of research carried out in the laboratories of the South Metropolitan Gas Co. Both fresh air and products of combustion enter and leave the appliance without any possibility of passing into the room, but air from the room passes between the outer casing and the heating chamber and is projected, warmed, into the room again through openings in the top of the casing. Heat is provided by four Bray jets, which can be adjusted by a patent tap to give half, three-quarters, or full gas rate (Fig. 9).

Catalogues. Mr. H. R. G. Montgomery has a few catalogues reserved for persons who were not able to visit the exhibition; these can be obtained on application to him at 4 Vernon Place, Southampton Row, London, W.C.1, price 2s. 4d. post free.

(To be continued.)

Natural Lighting of Factories

Sven M. Sternfeldt [L]

Pilkington Brothers Ltd.

IN HIS PAPER at the R.I.B.A. Industrial Architecture Conference, printed in full in the last JOURNAL, Mr. W. A. Allen invited more precise information on certain points concerned with factory lighting. This short article puts forward some suggestions on ways in which available materials can be used to solve some of the problems he mentioned.

It is becoming generally accepted that monitor construction does provide very even illumination and at the same time is economical and sound. The main difficulty experienced in its use is the exclusion of direct sunlight, which, at certain times of the day obviously produces unpleasant contrast and glare. This problem is common to many types of roof lighting, particularly the normal sloping roof glazing in shed type construction.

One method of reducing this unpleasant condition in monitor lights would be to erect some form of egg crate against the face of the vertical glazing, which would take care of the direct rays of the sun, and at the same time permit the light to enter over the whole area and be reflected from the various surfaces. This system, however, would be both costly to construct and difficult to maintain and clean, in addition to which there would be a considerable loss of light due to lack of diffusion.

It is, however, possible to obtain exactly the same effect by using hollow glass blocks, which would automatically provide their own egg crate approximately 4 in. thick by virtue of their horizontal and vertical joints (Fig. 2). Such blocks are patterned scientifically on both faces to provide adequate diffusion, and there are types designed to reduce dazzle in addition. These will greatly assist the spread of light without causing glare. Designing the structure correctly to incorporate these glass blocks does not call for any special construction, apart from the weight factor. Projecting hoods and fins can be used if necessary to overcome exceptional conditions of aspect.

Other advantages accruing from the use of hollow glass blocks would be the high heat insulation value obtained, together with good sound insulation; and there is, of course, absolutely no maintenance other than cleaning. This type of block has been used in monitor roof construction in the United States with, it is believed, considerable success. Questions of weight and cost may militate against their very general use here, but the distinct advantages mentioned should weigh strongly in their favour.

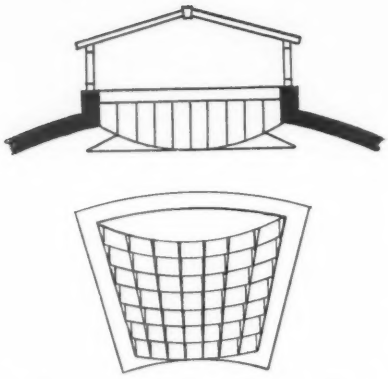

Fig. 1

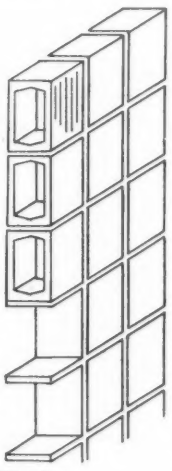

Fig. 2

Another type of roof which is becoming popular is the shell concrete barrel vault or dome. This system presents its own serious problems in day-lighting, on account of its very form and construction. There are certain portions of the structure from which openings are debarred owing to the position of the reinforcement, so that the collaboration between the architect and the structural engineer has to be very close indeed when determining the areas available for lighting.

Many different methods of piercing the roof have been used and experimented with all over the world; the following are three typical solutions:

1. The continuous lantern or sky light running centrally along the barrels.

This is the most obvious method and has been widely used on the Continent; it has, however, the disadvantage that structural beams must be formed to support the lanterns or glazing and struts are necessary to preserve continuity of construction. The light distribution curves leave much to be desired, and when looking along one of the barrels, the bright sky can be very disconcerting. An arrangement of baffles would cut off direct vision of the sky, except from almost immediately below, and the outer baffles running lengthwise could be shaped so as to reflect light on to the under side of the curved surfaces on either side of the opening, thereby reducing contrast (Fig. 1).

2. Precast panels of lenses or pavement type lights fitted into openings formed in the structure.

Fig. 3

This method gives a reasonably flush appearance to the roof from the outside. Inside the glazing bars, to a certain extent, form baffles against oblique glare. Unfortunately, the bars considerably reduce the proportion of glass area. The lenses themselves effectively diffuse the light except under direct sunlight, when points of dazzle are bound to occur, otherwise this construction is reasonably satisfactory in itself, and the only suggestion for improvement which immediately presents itself would be to increase the depth of the glazing bars to provide an egg crate and thereby cut off a greater proportion from direct vision (Fig. 3).

3. Glass domes.

This method is usually most unsatisfactory, because the upstand of the orifice is usually small in comparison with the size of the opening due to the thinness of the roof. Consequently, direct vision of the sky is possible through the openings from quite a considerable distance, a condition which is enhanced as soon as the glass domes are placed on the slope of a barrel or dome. Here again, the egg crate principle, which is becoming increasingly popular for artificial illumination, is a solution. Annular vertical vanes or slats might be supported by similar radiating slats rather in the form of a spider's web, and fitted into each opening. The depth of the slats should be calculated to provide the correct amount of baffle according to the particular position, and by presenting greater unobstructed surfaces would reflect the light in directions which would otherwise receive no direct illumination. Around the perimeter of the opening, the outermost annular slat would be flanged so as to reflect the light on to the under side of the surrounding ceiling, thereby reducing contrast and creating a larger light area than would otherwise be possible. An outline of this idea is indicated in Fig. 4, which shows cross sections of two domes in critical positions. It will be seen from the dome on the slope that the system of slats must be vertical, as otherwise, direct vision of the sky could not be avoided.

In all cases the problem boils down to preventing the bright sky from coming within the operative's normal field of vision, either while working or if he chances to look up, because if it does, unpleasant eye-strain occurs, and he can be momentarily blinded should either the sun or a very bright patch of sky happen to be visible.

Certain conditions of planning and fenestration, particularly in old factories, make modernization or adaptation very difficult, but there are available types of glass which, by means of prisms, bend the light passing through them. Such glasses can be used in positions where it is desir-

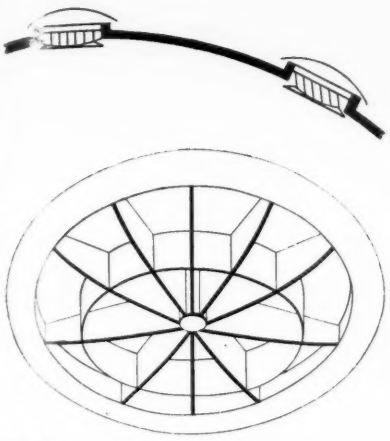

Fig. 4

able to throw light upwards deflecting it on to a reflecting ceiling or other surface. Clerestory lighting lends itself particularly well to such types of glass, which accept the light from quite a large area, and in the main direct it upwards on to a reflective ceiling. Direct vision of the glass can be eliminated by means of projecting hoods or other baffles.

One of the greatest problems today is that of preventing heat losses from large factory spaces. Double glazing in many forms is now available both as patent glazing and hermetically sealed units. The advantage of the latter is readily seen because the two outer surfaces are the only ones which require cleaning. Raymond McGrath and A. C. Frost in *Glass in Architecture and Decoration*, show that in a window in ordinary conditions, glass transmits about 1.1 B.Th.U's per sq. ft. for area per hour per degree F. of temperature-difference between the two sides of the glass. Two glasses spaced $\frac{3}{8}$ in. apart on the other hand, transmit only about 0.54 B.Th.U's. These quantities are almost unaffected by the glass thickness up to $\frac{3}{8}$ in. Solid brickwork 9 in. thick transmits 0.44 B.Th.U's. A $\frac{3}{4}$ in. interspace gives virtually the maximum possible insulating effect, because a wider interspace may induce internal convection currents. On the other hand, if the space is reduced to $\frac{1}{4}$ in. it is interesting to note that the insulation given is 88 per cent of that given by $\frac{3}{4}$ in. For this reason the $\frac{1}{4}$ in. space has been standardized in all prefabricated hermetically sealed units. Such units are available in quite a wide variety of glasses so that various conditions can be catered for. The cost of these units is necessarily fairly high, but the economy of fuel consumption, reduction of condensation, the increase in comfort to workers and improvement in the efficiency of apparatus would, in a measurable time, outweigh the initial outlay.

Many of the suggestions set out above are tentative and are intended to provoke discussion, because at this stage considerable research and experiment are still necessary before the ideal solutions are found.

Practice Notes

Edited by Charles Woodward [*A*]

WAR DAMAGED SITES BILL. This Bill passed its third Reading in the House of Commons on 18 November 1949, and will come before the House of Lords.

The Bill empowers county, county borough, metropolitan borough and county district councils and the Common Council of the City of London, to take over and hold for a period of not exceeding five years, war damaged sites in their area, if the damage has not been made good and the site is in a condition harmful to the amenities of the neighbourhood. Either they may lease the land by agreement or the Minister of Health, if he is satisfied that the site will not otherwise be put in good order, may authorize them to take possession by compulsion.

Where the local authority are in possession of the site and it seems likely that at the end of the period the land will return to a derelict condition, the right to hold may be extended from time to time either by agreement or by compulsion, but the total period must not exceed 10 years.

For compulsory powers the Minister's authorization will be required and this is not to be given if it appears to the Minister that persons interested will carry out, within a reasonable time, work which will make the site non-injurious to amenities. The Minister may postpone his decision if objection is made on the grounds that a person interested in the land is prepared to do the work himself.

Once local authorities have taken over sites it will be their duty to put and keep them in a condition which is not detrimental to the amenities of the neighbourhood, or to secure that this is done under a lease of the land, which they will be authorized to grant to another person for a period not exceeding the period for which they are entitled to hold the land themselves. The local authorities may use the land for any of their statutory purposes or as a garden.

Compensation will be on the basis of Section 2 of the Compensation (Defence) Act, 1939, but in assessing the compensation rent no account is to be taken of the fact that a further period of possession might be obtainable nor (where an extended period is given) of any increase or depreciation in value of the land due to the previous period of occupation by the local authority. Any right of the owner to a cost-of-works payment is to be ignored for compensation purposes.

Where a person interested in the land wishes to develop the site himself and has obtained planning permission, then the Minister may direct the local authority to relinquish the land if he is satisfied that the person can and will carry out the work. This will bring to an end any lease of the land by the local authority to another person.

The local authority may enter on a bombed site and remove material which is detrimental to amenity, subject to payment of compensation for any damage or disturbance. Where land goes back to the persons interested they will have to obtain planning permission afresh for the continuance of any use of the land started under the Bill, but not for a reversion to the previous use.

Local authorities will consult the War Damage Commission as to the category of any sites which they propose to take over. The Bill provides that where the Commission are satisfied in a cost-of-works case that all necessary permissions could be obtained for carrying out the work of making good war damage, but it appears to them that the work will not be done within a reasonable time, they may determine to convert any cost-of-works payment outstanding on the site into a value payment.

MINISTRY OF EDUCATION. In connection with the economic situation the Prime Minister stated that 'we shall maintain the progress of school and technical college buildings, securing the necessary savings by reducing costs and postponing the expansion of the school meals service.' The Ministry of Education have issued a Circular 209, dated 28 October 1949, explaining the action which the Minister has taken or proposes to take to implement this announcement. The Circular is too long to reproduce here but it indicates that reductions in the cost of Primary and Secondary Schools are necessary, and refers to the first of the Ministry's Building Bulletins to be issued and which is obtainable at H.M. Stationery Office, price one shilling. This number deals with primary schools. Amendments to the Building Regulations are also under consideration.

In 1950, expenditure on work costing under £5,000 will be restricted over the country as a whole to about three-fifths of the 1949 figure. At primary and secondary schools, apart from essential maintenance, work should be limited to jobs which will provide new places; as far as possible, other kinds of work, especially those involving the use of softwood, should be deferred.

Until further notice the Minister will be able to recommend the issue of licences for work above the free limit at independent and direct-grant schools, etc., only in cases of exceptional urgency.

Appendices to the Circular lay down the basis for calculating the cost per place, and the provision of places in secondary schools while the compulsory age remains at 15.

MINISTRY OF HEALTH. The Ministry announce as a supplement to Circular 76/46 that supplies of coloured pitch mastic as well as of coloured bituminous asphalte are now freely available. Appendix B of Circular 28/49 is corrected by making the thickness of both black and coloured mastic asphalte for domestic flooring a minimum of $\frac{5}{8}$ inch.

Circular 102/49 dated 4 November 1949 refers to the Housing Programme and the

economic situation. It quotes the Prime Minister's statement 'that by reducing the number of licences issued for the erection of houses by private persons, we shall secure that the local authority programme for the building of houses to let can proceed without any marked reduction.' The Minister of Health has decided that for the time being the issue of licences for private house-building should be suspended except in respect of individual cases where negotiations between an applicant and a local authority in regard to the erection of a particular house have proceeded so far that the local authority consider themselves under an obligation to issue a licence, and it will be for the local authority to satisfy themselves whether in fact a promise has been made. Subject to their consideration of individual cases of this kind no further licences should be issued and no further promises should be made for the present.

The Minister's decision is given pending his further instructions to Principal Regional Officers regarding the restricted volume of private house-building licensing which is to remain at the discretion of the local authority.

Circular L.R.L. 6/49 (Revised) dated 17 November 1949 concerns late notification of War damage to requisitioned properties in the London Region. It is in substitution for L.R.L. 6/49, issued on 19 August 1949, and published in these Notes in the JOURNAL for September 1949.

Local authorities are asked to warn owners of all houses which have recently been de-requisitioned or which are still requisitioned, that the Commission are not prepared to accept a claim for war damage repairs unless the occurrence of the damage has been notified direct to them, and that if any damage has been sustained by their property which they have not themselves notified to the Commission they should write to the appropriate Regional Office without delay, giving full particulars and asking whether the Commission will give special consideration to their case and accept a notification despite the delay.

Where the Local Authority themselves propose to carry out repair of war damage to requisitioned properties the Commission will be prepared to consider a notification from them. In these cases a list should be sent to the Regional office of the Commission of the properties concerned showing the dates of damage and the dates of requisitioning. The Commission will advise the Local Authority whether they have received notification of the damage and where no notification has been received and the case is one which they are prepared to consider, they will issue form C.1 to the local authority for completion and return to them with a specification of *all* items of outstanding war damage whether or not these items are to be repaired now. After an inspection the Council will be advised of the items of damage in respect of which the Commission will accept a claim. These items will be limited to those which the Commission's Technical Officer is satisfied beyond all reasonable doubt are due to war damage and which are still unrepaired at the time of the inspection. Where notification is made in this way by the Council, applications in respect of properties in one street should be sent in together.

If a notification is accepted from the Council the Commission will not be prepared to consider a later application from the owner. Accordingly the Local Authority should consider whether in any particular case it would be advisable to give the owner an opportunity of commenting on their specification before it is sent to the Commission.

IN PARLIAMENT. Private Building Licences (New Arrangements). Asked whether he is now in a position to make a statement on the erection of houses under licence, the Minister of Health replied: Yes. The issue of further licences has been suspended for the time being pending further directions as to the restricted volume of private house building licences which could be authorized under present circumstances. I have now decided that local authorities will be given a discretion to resume the issue of licences and to issue them up to a maximum of one-tenth of the further allocation of houses made to them by the principal regional officers of my Department. The new arrangements will operate as from 1 February 1950. The principal regional officer will communicate with each local authority, who should await this communication from him. The Government will permit the erection of houses for letting for purposes approved by the local authority, and at rents approved by them. Special consideration will, therefore, be given by my principal regional officers to any applications made to them by a local authority for approval, within the limits of their allocation, to exceed the proportion of houses which can be authorized to be built under licence. (1 December 1949.)

HOUSING MANUAL. New guidance to local authorities to assist them in their housing plans is contained in the revised Housing Manual published by the Ministry. It is obtainable at H.M. Stationery Office, price 3*s.* 6*d.* net. New features in the Manual include three-storey terrace house, new-type terrace houses, old people's dwellings, family flats, maisonettes and hostel units which can be provided under the Housing Act 1949.

MINISTRY OF TOWN AND COUNTRY PLANNING. Bulletin of Selected Appeal Decisions, No. 6, September 1949, issued by the Ministry, can now be obtained at H.M. Stationery Office, price 6*d.* net.

Mr. E. M. King, M.P., Parliamentary Secretary to the Ministry of Town and Country Planning, addressing the Risborough branch of the C.P.R.E. on 11 November 1949, said: 'In the light of much harmful and sporadic development in inter-war years there has been a post-war tendency to forbid housing outside existing communities. That tendency must be corrected. It never formed any essential part of planning policy. Not everyone wants to live in a community. Some, and among them those who contribute most to civilizing influences, like to live in isolation. That is a personal decision, and it is not for planning authorities to interfere with it. If a man seeks to build an isolated house in the countryside it is clear that he is entitled to do so, so long as it does not affront the eye, absorb farmland, or create some other public mischief. He may have to accept lower standards of service, or to provide his own, but that is his concern.

Some rural planning authorities may sometimes have adopted too restrictive a policy. The presumption should always be in favour of granting applications for planning permission, unless there are grave reasons against it. If this were understood there would be fewer successful appeals to the Minister.

Nor must it be thought that every successful application for isolated development forms a precedent for further consents. In this matter it does not follow that what Tom has Dick must have too.

The very substantial powers now possessed by local planning authorities imply a responsibility scrupulously to avoid any appearance of interfering unduly with the right of the individual, subject to his obligations to his neighbours, to plan his own life.'

MINISTRY OF WORKS. The Minister of Works has confirmed a reduction of $\frac{1}{2}d.$ per square yard in the selling price of gypsum baseboard and lath and $\frac{1}{4}$ in., $\frac{3}{8}$ in. and $\frac{1}{2}$ in. thicknesses of wallboard. The reduction operates as from 3 November 1949 (137/49. P.1.73).

Advising Leaflet No. 3 1949 has been issued by the Ministry. It concerns the lagging of hot and cold water systems in houses.

THE CONTROL OF TIMBER (No. 52) ORDER 1949, No. 2093. This Order came into operation on 21 November 1949.

The principal changes are as follows: No American oak and no description of teak (except scantlings and strips) may now be acquired, disposed of, used or consumed without a licence.

The licence-free acquisition and consumption of small quantities (£1 lots) of home-grown and 'recovered—unclassified' timber are no longer permitted.

Plywood may be purchased, without licence, by any person to a limit of £2 a month and may be used.

The acquisition, disposal, use and consumption of veneer are no longer controlled but merchants must keep records of their dealings in veneer.

STANDARD METHOD OF MEASUREMENT. The Journal of the Royal Institution of Chartered Surveyors for November 1949 states that clause 10 of the R.I.B.A. Form of Contract provides that the bills of quantities 'unless otherwise expressly stated shall be deemed to have been prepared in accordance with the principles of the Standard Method of Measurement of Building Works last before issued.'

The Quantity Surveyors' Committee of the Royal Institution are informed that it is the practice of some members to insert various types of preliminary clauses which prevent the contractor from having the benefit of the Standard Method if the quantities should be at variance with it. These preliminary clauses, of which the Quantity Surveyor's Committee have seen a number of examples, vary from unobjectionable reservations to those which are contrary to the spirit of the Standard Method.

The Quantity Surveyors' Committee deprecate the insertion of such clauses or any departure from the Standard Method unless particular and exceptional cases justify it. In this connection the attention of members is specially drawn to paragraph 2 of the General Principles on page 1 of the document.

LAW CASES. Smiley v. Townshend. This case, tried in the King's Bench Division on 27 October, concerned a claim by the plaintiff of the balance of a sum alleged to be due in respect of dilapidations on the determination of a lease of premises in Knightsbridge, London.

The premises were demised under a lease for 98 years from 24 June 1849, expiring on 24 June 1947. In January 1945 the property was requisitioned by the Westminster City Council and converted into two maisonettes and it was still requisitioned when the lease expired. The claim was for £585 being the cost of delivering up the premises in good order at the expiration of the lease. The defendant paid £141 10*s.* 6*d.* and pleaded that he was not liable for dilapidations of a decorative nature. He claimed that he was protected by Section 1 (1) of the Landlord and Tenant (Requisition of Land) Act 1944, which prevented the plaintiff enforcing remedies for damage, if any, which occurred during the period of requisition. He also claimed that he was protected by Section 18 of the Landlord and Tenant Act 1927.

In giving judgment his Lordship said that it was right to use the schedule of conditions at the date of requisition as a starting point, but one must also take into account the condition at the end, and find out how far those dilapidations which existed at the commencement of the requisitioning were still in existence after repairs had been carried out by the tenant who enjoyed the requisitioning, or by the requisitioning authority. The defendant was only bound to pay for dilapidations which existed at the termination of the lease.

With regard to the contention that there had been no damage to the reversion his Lordship said the proper test was to find out what was the condition of repair for which the defendant was responsible, and, having found that out, ascertain by what amount approximately was the value of the existing reversion, subject to the requisitioning, reduced by reason of the lack of repair for which the defendant might be responsible, so as to induce a prospective purchaser to offer a lower price. He was satisfied on the evidence that there would be damage to the reversion by reason of that lack of repair for which the defendant was responsible, as distinct from the Westminster City Council.

With regard to the defence under the Landlord and Tenant (Requisition of Land) Act 1944, his Lordship said that in his view Section 1 (1) related only to damage or dilapidations arising or recurring during the period of requisitioning. It was in respect of those matters only that the lessor was prevented from enforcing his covenant for repair, or delivering up in good repair. In those circumstances he must exclude from the claim for dilapidations any damage which arose during the period of the present requisitioning. He had to ascertain how far the dilapidations existing at the date of the requisitioning had been repaired or reinstated by the date of the expiration of the lease. He had had evidence from an official of Westminster City Council as to money spent on the premises. His Lordship said it seemed to him that the agreed figure of £585 should be reduced by the sum of £150 and also by the payment of £141 10*s.* 6*d.* which the defendant had made. Judgment was accordingly given in favour of the plaintiff for £293 9*s.* 6*d.*, with costs.

(The case is reported in THE ESTATES GAZETTE for November 12 1949.)

Cunliffe v. Goodman. King's Bench Division, 16 November.

This case concerned the interpretation of Section 18 (1) of the Landlord and Tenant Act, 1927, which provides that if premises are to be pulled down at the end of a lease the landlord can not make a claim for dilapidations.

The judgment in this case referred to the case of Salisbury v. Gilmore (1942. 2 K.B. 38) which laid down that the critical date was that on which the tenancy terminated. If on that date the landlord had the intention of pulling down the premises he could not afterwards change his mind and recover damages for breach of covenant. (The case is fully reported in THE ESTATES GAZETTE for 26 November 1949.)

'Ah well—back to the old drawing board'

Correspondence

NORTH-EAST POLDER, HOLLAND

Sir,—I read with interest the most informative article on the North-East Polder in Holland, which appeared in the JOURNAL for October. Perhaps the following may be added.

1. After the construction of the North-East Polder it was found that the subsoil water was seeping into the new Polder from the somewhat higher mainland with consequent drying out of the latter. To prevent this danger in the South-East and South-West Polders is the function of the wide canal shown between the new Polders and the mainland. The new lake to the east of Amsterdam is to be formed to maintain the water table in the Amsterdam area. Should this be lowered appreciably there would be danger of rotting to the thousands of piles on which most of Amsterdam is built.

2. The winning of more land, another great stride in the traditional growth of the Netherlands, has created more problems not however unique in Dutch history. What is to be done with the fishing and connected industries formerly dependent on the Zuyder Zee? In 1920 there were some 3,000 fishermen plus 2,000 in connected industries. I understand this has been reduced to some 1,800/2,000 fishermen, and the fresh water lake can not provide a livelihood. It is estimated that there will be occupation for 900/1,000 fishermen with, say, 600 in associated industries. Alternative work must be found for the remainder. Also what is to become of those historic towns now no longer ports? The remoteness of some towns has isolated types, costumes and customs, and resulted in poor stock hardly compensated for by the attraction of tourist trade. The communities will surely find themselves deprived of their independence, and a minority feeling will be hard to overcome.

3. Another matter which may affect a greater number of people is the question of the possible change in micro-climatology consequent upon the Zuyder Zee works. 1,341 square miles of salt sea are to be turned into 876 square miles of arable land and 465 square miles of fresh water.

The Netherlands enjoys, or rather suffers, a somewhat Continental climate. It is possible that the land surrounding the former Zuyder Zee, and *ipso facto* the new Polders, will be subject to an intensification of the climatic extremes. In the winter the fresh water will freeze more readily than did the salt water. In the summer it will be hotter and, what is more trying, the humidity will be greater. The areas around the Zuyder Zee provided breeding grounds for the malaria-carrying mosquito. The increase in fresh water may increase the incidence of malaria.

I have no doubt that the watchful and practical Dutch have already considered these problems and may have the solution, but they are of interest as arising directly from the regional plan and indicative of the need for planning to be a continuous process.

G. V. CHARLES [*A*]

Book Reviews

The Clyde Valley Regional Plan, 1946. A report prepared for the Clyde Valley Regional Planning Committee, by *Sir Patrick Abercrombie* and *Robert H. Matthew*. 12 in. × 9¼ in. xv + 395 pp. + pls.+ folding maps, 2 in pocket. Edinburgh: H.M.S.O. 1949. £4 4*s*. *Also* Report of Clyde Valley Regional Planning Advisory Committee, pam. 1947, in pocket.

Work on the regional plan for the Clyde Valley began in February 1944. Apart from the authors, and the committee itself, and apart also from the special contributors such as Mr. T. B. Manson, the Chief Land Officer of the Department of Agriculture for Scotland, whose chapter is one of the best in the book, about ten people laboured full time and upwards of thirty part time to put the evidence together and present it. The task was formidable enough; and it is doubtful whether anyone but Sir Patrick—the father of regional planning in this country—backed up by a junior partner with sound judgment, local knowledge, and a devoted band of helpers, could have brought it to a coherent conclusion. It is a monumental work, not only in point of bulk and comprehensiveness, but because it is designed, with very great skill, to show the major and minor facets of an enormous and a terrifying problem—that of urban congestion and decay in a region housing nearly half the population of Scotland.

To say, after this, that the book is wellnigh unreadable may sound paradoxical and ungrateful: yet there may be some truth in the criticism none the less. The text is lively and clear, the illustrations lavish, and the whole format assembled with infinite taste and care. One can absorb a chapter at a time, or a subject at a time, and find it stimulating; but one simply can not take the book out of a shelf and *read* it. In the first place there is the physical difficulty of handling the volume, except on a table or a lectern; and even then the unfolding, in two directions, of the maps so beautifully printed on thin paper is impossible without damage. In the second place the report is essentially a work of reference. The synoptic vision, which its authors obviously possess can not be conveyed to more than a small handful of readers; the great majority will dip and delve, as they do in an anthology, and come away with some food of the kind they can most easily assimilate. Lastly, there is the difficulty inherent in all planning reports of great dimensions, that some features are of permanent validity, some have a political life and change with changing policy, and some are quickly overtaken by events.

The chapter on Regional Architecture and the Recovery of Amenities, for example (in which one can trace the hand of Alan Reiach), has a permanent value for its research and also for its delightful methods of presentation. The chapter on Local Government Administration, which makes the case for a new Regional Authority, has immense political significance and should be carried into every community in the Clyde Basin as a Pamphlet or Broadsheet. On the other hand the proposals for redevelopment and rehousing, both in new towns and in neighbourhoods of reduced density in the old ones, have come up against a desperate economic situation, without—as the authors point out—a parallel economic plan for the country as a whole.

'It is not too much to say that, if a reasonable standard of decency of living is to be aimed at, the major proportion of the communities of the region require *complete replacement within the next* 25 *years*.' This quotation from the report is not an overstatement. 700,000 people crowded together in 1,800 acres gives the measure of congestion; and the density studies of actual groups of housing at 150 dwellings and more to the acre would convince anyone, let alone an architect or a town planner, that 'decency of living' is out of the question in such conditions. Yet although the statement is entirely reasonable when viewed as a housing standard, it may not be even considered when limits of capital expenditure are drawn up as part of the national budgets of the next 25 years.

From a planning point of view, the conception of the green belt as an area of intensive agricultural use with the New Towns contained within it, the decentralization of nearly half a million people from Glasgow, the provision of 7,500 acres of recreational open space for the workers of the Clyde Basin, the improvement of services, and the proposals for roads in what is called 'the combined operation of transport', are all important and valuable ideas. From an economic point of view they do not appear to have much chance of operating. Since the survey started, nearly six years ago, the green belt has been eaten into, New Towns and even suburban extensions are not taking the load that it was hoped to transfer from Glasgow, road programmes have suffered severe 'cuts', and the workers—though still fully employed—are lacking the great part of the amenities which are here planned for them.

Is this simply a question of time, or is there a missing link in the chain of planning operations? The proposal for a Regional Authority shows that within the limits of their terms of reference the authors of the Clyde Valley Plan thoroughly understood the interdependence of industry, agriculture, forestry, recreation, and housing in their region. But the *Central and South-East Scotland Plan* poses an opposite problem, that of rural depopulation—and the two regions at least should be taken together. More than this, someone has to make the kind of calculation which can show the relative costs and comparative advantages of redeveloping a square mile in the middle of Glasgow as against an equal area in Merseyside or Portsmouth, or of New Towns in Durham or Greater London or Fifeshire, or of the electrification of railways as compared with the building of high density blocks of flats on expensive land in central areas.

Somewhere these calculations are probably being made; as yet, however, they do not underly the terms of reference which are given to town and country planners; even those who embark on major surveys such as these. The fairest evaluation of these plans is therefore on the basis of the information they give, the presentation of the physical and social problems which they throw up, and the methods and principles suggested for their solution. On all these heads the *Clyde Valley Regional Plan* is outstanding. Students, if they could afford this as a regular text book, would find particularly valuable the studies of migration, the industrial review, the recreational access plan, the principles applied to land classification and agricultural needs in the region, the density standards (existing and proposed), the social surveys of Paisley and Hamilton, the plan for the Leven Valley, and the short illustrated essay on Architectural Design.

In short, Sir Patrick Abercrombie, though now retired from an official academic post, is still teaching us a great deal about regional planning.

WILLIAM HOLFORD [*F*]

Robert Maillart, by *Max Bill*. 8½ in. × 8¼ in. 180 pp. Text illus. Erlenbach-Zürich: Editions d'Architecture. [19—]. £1 12*s*.

Max Bill has put us all in his debt by producing this most significant book. It has become a commonplace among architects today that Maillart, as an engineer, has made one of the most significant contributions to contemporary architecture. No book dealing with our problems today can afford to omit his achievements.

Maillart was an engineer and has a 'scientific' approach to building problems, but his work is especially valuable as a demonstration that science is a matter of understanding and not of mathematics or technique. The day is happily past when an architect could claim that a building was beautiful because it was exactly calculated. It is to be hoped that the reader of Maillart's book will finally abandon any lurking reminiscence of such an idea, and from this point of view the text—in French, English and German—will be found as stimulating and valuable as the photographs and drawings. In an article on 'Design in Reinforced Concrete,' written for the SCHWEIZERISCHE BAUZEITUNG in 1938 Maillart says: 'It is not only the feeling for beauty which makes desirable the conception of the whole primary to that of the single elements. Seeing the structure as a whole nearly always brings economic advantage as well.' In other words, the whole structure is integral and must be so regarded. For this purpose the thumbing of steel or concrete handbooks will be found to be an inadequate technique. He points out: 'The notion certainly very often prevails that the calculations should clearly and concisely determine the dimensioning. In view of the impossibility of taking all the secondary conditions into account, any calculation

can only provide a basis for construction upon which to set the secondary conditions. Accordingly the calculation results can either undergo direct application or on the other hand modification, and the latter will be the case when not a calculator but when a constructor is at work.' Maillart reminds us that a mathematical generalization on a group of observations is only completely valid as a mathematical proposition, not as a description of the behaviour of a given structural system. He suggests that the only way to learn what really happens is to experiment, measure deflections in existing buildings, and make observations.

'Only a simple method of calculation is therefore possible and adequate. The reasonable judging of its result any way gives a construction of greater uniform safety than is possible with the strict but thoughtless application of a meticulous method of calculation to whatever degree of accuracy it is taken.'

Proceeding on this basis Maillart has revolutionized the design of reinforced concrete bridges and has made important contributions to the evolution of economic structural systems for multi-storey buildings. He has not only challenged engineers but has produced some of the most beautiful structures of this century.

The reader of Max Bill's book will be able to study Maillart's gradually increasing mastery of his material and a bridge will never again be for him a mere means of carrying a road or rail.

R. TOWNSEND [*A*]

Russian Art, by *Tamara Talbot Rice.* (Pelican books, A 182.) 7¼ in. 276 pp.+32 pls. West Drayton: Penguin Books. 1949. 2*s.* 6*d.*

This is a lively and often quite lyrical account of Russian art, from the 10th century to the present day, in which architecture plays no mean part. To cover such a broad cultural field over a period of ten centuries Tamara Talbot Rice has had to restrict herself to an outline history, but there are advantages in this for the general architect reader. It enables him to obtain, with little effort, the historical context of a particular building related to the development of the other arts such as garden layout, sculpture, painting, metalwork, costume, and the theatre.

Mrs. Rice insists, quite rightly, that before one can understand Russian national art it is essential to examine the primary characteristics which have established the nature of Russian artists' work and subjected the idiom of alien artists, such as Cameron, Rastrelli and Quarenghi, to Russian taste and traditions. Her poetic description of Russia's changing landscape and climate as one moves from north to south or through the seasons of the year appropriately emphasizes the importance of environment; and on the social side she has some interesting comments to make in the final chapter on contemporary art. These might well have come in the introduction, for they are relevant to the examination of a national art of past as well as present-day society. Mrs. Rice poses some questions: 'What state of society, what frame of mind, above all what incentive is required to inspire works of art and what characteristics are called for in the artist?' Her answer is that society must *demand* works of art; the artist must have acute, passionate reactions to life, but he can not so respond unless those around him are keenly interested in æsthetics, nor will he be successful if he segregates himself from the layman.

These remarks may give the impression that this book is concerned mainly with generalities. This is not so; there is just the right amount of detail to make one want to study the more monumental publications on the work of individual Russian artists. For instance, the account of Charles Cameron's activities left me keen to assist in solving the mystery of the almost complete lack of evidence of his work in this country and his sudden rise to favour and architectural fame in Russia under the patronage of the Empress Catherine.

The carefully selected photographs give vivid emphasis to the written word. Altogether a very good halfcrown's worth. It should be on the book reference list in all the schools of architecture.

ARTHUR LING [*A*]

Building Construction for Firemen, by *Hedley W. Miller* [*A*]. (Institution of Fire Engineers.) 7½ in. 175 pp. text illus. Crosby Lockwood. 1949. 10*s.* 6*d.*

The fireman has a viewpoint on building construction very different from that of the architect or builder. For example, he needs to know that a timber staircase weakened by fire is far more likely to bear his weight than one of stone, which is liable to collapse suddenly and completely under even a moderate degree of heat. He needs to appreciate (which some architects do not!) that unprotected structural steel is anything but fire-resisting and consequently that reinforced concrete floors supported on naked steel beams are a dangerous delusion where fire is concerned. There are also many things that an architect or builder must know which a fireman need not. Therefore a book under this title ought to be written by an author with a thorough knowledge of construction (from the 17th century onwards) and who has a grasp of the fireman's peculiar problems and needs. As an architect who is Honorary Technical Consultant to the Institution of Fire Engineers on architecture and building, Mr. Miller is well qualified for his task and he has performed it ably. He begins with a chapter on simple measuring and drawing for the fireman—who today frequently has to write a report. He continues with an elementary discussion of the properties and fire behaviour of typical materials and then goes on to describe and illustrate common structural features, stating clearly the ordinary terms used in building. Generally he has succeeded in avoiding going too deeply into technical detail (not too easy for an architect), and keeping strictly to the fireman's point of view. As he himself says, his book is not a discourse on how buildings ought to be built to reduce fire risk, but a statement of what the fireman ought to know about them when he has to extinguish fires in them or rescue trapped persons. One defect of the book is that the author does not mention the post-war formation of the Joint Fire Research Organization, which now owns the Fire Testing Station, and of the Fire Protection Association, but describes the old national set-up before those bodies were created.

ERIC L. BIRD [*A*]

An Introduction to Tudor Architecture, by *John H. Harvey.* (Introductions to architecture series.) 9 in. 48 pp.+(49) pls. Text illus. Art and Technics. 1949. 10*s.* 6*d.*

This book is a short study of the last phase of Gothic and deliberately excludes the beginnings of classicism. Like all Mr. Harvey's productions it contains much extremely valuable and illuminating information about the masons and carpenters of the Gothic age and helps us to see how the major buildings are related to each other and to the Royal works, where, it is no exaggeration to say, the course of English architecture was, generation by generation, determined.

Mr. Harvey divides his subject into three periods. The first (1470-1500) saw the building of St. George's Chapel, Windsor; Magdalen College, Oxford; and Bell Harry Tower, Canterbury. It was the period of some of the richest of Gothic buildings, though, here and there, Mr. Harvey spotlights certain works in which a new and determined taste for simplicity is recognizable. He points to Magdalen Tower (begun 1490) as one such instance, but associates the new taste mainly with John Cowper and his work at Kirby Muxloe Castle which is as early as 1480-84. The period ends just as Henry VII begins those remarkable works which were to have such an influence on the architecture of the 16th century—his Windsor tower, the Palace of Richmond, and the chapel at Westminster which became his own mausoleum. Among these, Richmond Palace is a tantalizing absentee, of which we should wish to know much more. Mr. Harvey is able to assign the masonry work there to Henry Smyth (d. 1517) who, in his will, left a 'book of portraitures', no doubt one of those albums of drawings of which the earliest and most famous survivor is that of Vilars de Honecort. I would tentatively suggest that a drawing in the British Museum (Cotton. Aug. 1, 1. 4) may have something to do with Richmond Palace, or at least with one of the early 16th century Royal works. It has the special interest of showing one of those double galleries, open below, windowed above, which seem to have existed at Richmond and which were the prototypes of the Elizabethan 'long gallery.'

Mr. Harvey's second period begins at 1500 and continues till the fall of Wolsey in 1529. This is the age of some of the great college buildings, of the earlier stages of Hampton Court and of the first architecture to which we instinctively apply the label 'Tudor' rather than 'Gothic.' I question

whether Mr. Harvey is right in including Barrington Court in this period. I can not help feeling that its remarkably prophetic plan (the typically Elizabethan E) derives from the plan accidentally evolved at Hampton Court by Henry VIII when he added wings to Wolsey's entrance front, after 1531; that the builder of Barrington was an intimate of the King supports this possibility.

Henry VII's Chapel, begun by Robert Vertue and continued by William, comes into this period and was remembered throughout the century as the last great masterpiece of its kind. Both John Thorpe and Robert Smythson included it in their collections of drawings (collections, no doubt, in the tradition of Henry Smyth's 'book of portraitures') and it gave to Elizabethan architecture that persistent theme, the triple window-bay of which the centre unit is pointed.

The third and last period covered by the book is that of the building works of Henry VIII, his addition to Whitehall and Hampton Court, Greenwich and Hunsdon, and of the great Palace of Nonsuch. Nonsuch Mr. Harvey dismisses as a hybrid, though there is evidence that most of it was as English as Richmond—which is, I admit, to say that if Richmond was an English version of the Louvre (as a comparison of Wyngaerde's drawing with the famous miniature in the Duc de Berry's *Tres Riches Heures* suggests), Nonsuch was an English version of Chambord! But that applies only to the garden front; the rest of Nonsuch seems to have been in the Hampton Court manner, except, of course, where foreign decorative features were applied.

Mr. Harvey is to be congratulated on giving us so much real scholarship in so few pages. If the common reader complains that he is inundated with names and dates of obscure master-craftsmen, the answer is that they were not, and should not now be, obscure and that the names of artists form the essential key to the understanding of any period of artistic history. The illustrations are most carefully selected and include some extremely interesting, and relatively unknown, architectural drawings of the period. JOHN SUMMERSON [4]

Planning Stores That Pay, etc., by *Dr. Louis Parnes*. 11 in. (vi) + 313 pp. text illus. [New York:] Dodge Corpn. 1948.

The branch of architecture concerned with modern shop and store building flourishes best in peaceful and prosperous times, and consequently its free practice has been denied to this country for the past decade. It has therefore been necessary to rely mainly on the printed word for stimulation and study.

Following so soon upon Morris Ketchum's *Shops and Stores*, this very excellent book has completed the journalistic gap which previously existed on the post-war study of this subject. It is not by any means a duplication of the former work, but is complementary to it, inasmuch as it further conducts the reader into the vast and complex organization of store management, from stocktaking, checking and pricing to accounting, delivery of goods, exporting and staff welfare.

Dr. Parnes has a complete grasp of all these behind-the-scene activities, and his knowledge is conveyed to the reader in a most detailed and graphic manner, aided by innumerable illustrations and detail drawings.

For the statistically minded there is a special chapter on scientific and theoretical considerations, which delve into research on all aspects of planning and forms a survey of factors which affect it. The author has even given the results of careful investigations into factors affecting sales, such as shopping fatigue, the percentage of people to be found looking at the display during different hours of the day, and other information of this kind, which will be invaluable not only to the architect, but also to others concerned with the ownership or management of stores.

It is impossible in a short review to give more than a bare appreciation of the wealth of information and ideas which are packed into these pages. But quite definitely this is a book which, when it has been carefully studied, will need to be kept handy for reference. ELLIS E. SOMAKE [F]

Wood Specimens. 100 reproductions in colour. [*P. M. Nairn*, ed.] Text by *H. A. Cox*. 11½ in. xiv + (106) pp. + (100) pls. text illus. Nema Press ('Wood'). [1949.] £2 2*s*.

Each month the excellent periodical WOOD features a specimen plate in colour of decorative and constructional timbers. One hundred illustrations selected from this series have now been bound together to form a practical reference book for those seriously concerned with wood and its design and constructional uses. Each plate, which is true in colour and grain markings, is reproduced with an authoritative annotation. The B.S.I. nomenclature of commercial timbers is used throughout. The very high standard of production is noteworthy and characteristic of the publishers. J.C.P.

Theatres and Auditoriums, by *H. Burris-Meyer* and *Edward C. Cole*. (Progressive Architecture Library.) 11¾ in. viii + 228 pp. text illus. New York: Reinhold. [1949.] 88.00.

The theatre architect's work is by no means confined to providing comfortable seating and a workable acting area. These are elementary considerations, but his artistic contribution to the success of a performance lies in his ability to create through the power of his design the festive and sympathetic atmosphere essential to both actor and audience. A beautiful theatre—and this applies to ante rooms as well as auditorium—will in itself produce such a strong emotional impression that man's mind is at once lifted from the commonplace to the exalting sphere of art.

No matter, therefore, how efficient the stage machinery and how successful the acoustics, the architect will at best produce only a bare functional instrument, unless he can solve the æsthetic problems. That does not imply that he can afford to neglect the manifold technical requirements, but these must be arranged to fit into his artistic conception. This point, I believe, can not be stressed strongly enough, since there is in our time of over-specialization a tendency to present the fulfilment of function as an achievement in itself, and it appears from recent examples that technical advisers have often had more than their share in the architectural solution.

A number of books have been written on the various technicalities of theatre building—though some of the problems, i.e. acoustics, have not yet been finally determined—but there exists to my knowledge no book except this recent American publication *Theatres and Auditoriums*, which in such comprehensive form deals with literally every technical problem arising in front, on, and behind the stage. All the numerous basic requirements for the comfort of the audience and the performance of a play, including its preparation, are intelligibly and precisely described, and this is a most valuable handbook to all those concerned with this type of building.

Perhaps a chapter on history and development of theatre design ought to have been included, as this would have enabled the authors to describe the various attempts to achieve more flexibility and greater unity between audience and performance. Here, as in every other field, there has been continuous development and progress, and some of the experiments offer useful signposts to future trends and aims. RUDOLF FRANKEL [F]

The Englishman's Castle. A history of houses, etc., by *John Gloag*. Illus. by *Marjory Whittington*. 2nd ed. 8½ in. 176 pp. + 16 pls. text illus. Eyre and Spottiswoode. 1949. 10*s*. 6*d*.

This is a cheaper edition of a small, lively and informative book, first published in 1944. Alterations to the original text, which traces the evolution of the English home from Roman times to the present, have been few, but a number of new illustrations are used, and the rather startling coloured drawings of the earlier volume are now reproduced in monochrome or replaced by photographic plates—a wise change, many will think. An appendix contains an excellent bibliography. J.C.P.

Painting and Decorating, by *A. E. Hurst*. 7th ed. of work by *W. J. Pearce*. 9 in. xi + 470 pp. + front. + ix pls. text illus. Griffin. 1949. £1 12*s*.

The recognized standard work by the late W. J. Pearce has been completely revised and largely rewritten to bring it into line with contemporary developments in materials and methods, and with what the author claims to be an entirely changed outlook. For all practical purposes, therefore, this is a new book and one that should be useful to all connected with the decorating industry in view of its comprehensive nature.

Obituaries

Percy John Waldram, F.R.I.C.S. [*Ret. L*], who made a special study of the natural illumination of buildings, died on 8 November, aged 80, after a long illness.

Educated at Latymer's School, Edmonton, he was the eldest surviving son of John Waldram, civil engineer, the founder of the firm of John Waldram and Son. After a period of apprenticeship, P. J. Waldram succeeded to his father's practice in 1890, and continued it until after the outbreak of war in 1914, during which he was employed first in designing and testing aircraft. His services were later used in the Ministry of Munitions, and from 1918 to 1920 he was employed by the Ministry of Agriculture and Fisheries on land reclamation work. After carrying out some special surveys for the Office of Works, he resumed private practice in 1922 and continued until his retirement from the firm in 1944.

Best known in this country and abroad as a pioneer and a leading authority on daylight and sunlight in relation to buildings, he had considerable experience in civil engineering, and in his earlier days was responsible for the design of many railway bridges. His less well-known engineering achievements were the construction, in collaboration, of the pavilion of Herne Bay pier in 1913 and, when working for the Steel Wing Company in the first World War, the design of one of the first steel aircraft wings.

He commenced the specialist study of natural illumination about 1910, at first in collaboration with the late A. P. Trotter and the late Professor W. Clinton, and later he himself established principles and methods in the measurement of daylight which are now accepted practice. These he applied to legal work, and in 1923, in collaboration with his elder son Mr. John M. Waldram, he devised methods of predetermining and calculating daylight which are recognized as standard. A well-known expert in ancient light disputes, he gave evidence in many actions, some of which (e.g. Semon *v.* Bradford Corporation) are quoted as legal precedents.

The author of many literary works on structural engineering, perhaps the best known of Mr. Waldram's books is *The Principles of Structural Mechanics*, a textbook for architectural students first published in 1912, the third edition of which was published in 1948: this is still a popular standard textbook. His *Structural Design in Steel Frame Buildings*, first published in 1915, was also universally known and used, as well as the many pamphlets on natural illumination, of which he was the author. He wrote many papers for technical journals and learned societies.

Mr. Waldram was for many years a member of the Council and the Science Standing Committee, and an Examiner with the Board of Architectural Education. He had also served as the R.I.B.A. representative on many Committees of the British Standards Institution.

In his later years he was afflicted with arthritis, and during the war he was blown out of his house by a bomb; nevertheless he retained his full mental vigour, and actively pursued to the end the subject which he had made particularly his own. He was still engaged in it after his 80th birthday when he was confined to bed with several serious complaints and had undergone an operation.

Mr. Percy V. Burnett [*F*] has sent the following appreciation:

'The sad death of Percy J. Waldram has removed from our midst a great and unique character. Waldram was an engineer, a surveyor, a scientist, and was profoundly interested in architecture. For many years he made a special study of daylight and sunlight, and as the result of his researches these difficult subjects were reduced to comparatively simple matters within the understanding of all. His studies culminated in 1927 in the publication by the D.S.I.R. of Illumination Research Technical Paper No. 7, *The Penetration of Daylight and Sunlight into Buildings*, which was based upon a report that he had written, and which was not only the first clear exposition of the subject that was published, but which remains today the undisputed "bible" of the natural lighting engineer. The methods expounded in that paper were tested time after time, by the courts, engineers, and architects, but they have remained unshaken; and eventually they received the recognition of the International Commission on Illumination. In the field of sunlight, Waldram was Chairman of the R.I.B.A. Joint Committee on the Orientation of Buildings, whose Report, published in 1932, still remains the most complete publication on the subject in our language.

'Waldram applied his great technical knowledge of daylight principally to easements of light, the ancient lights that have been a thorn in the side of architects for over a hundred years. He established his methods in court for the first time in the case of Semon *v.* Bradford Corporation in 1922, and diagrams produced on the Waldram method have been used in nearly every prominent right-of-light case heard in the Courts ever since, as well as in thousands of cases that did not get so far. Architects flocked to Waldram from all over the country (and, sometimes, from abroad) for his help, and whether their case was good or bad, they found him an invaluable ally, and a doughty fighter on their behalf. Even during his last illness, when he was too weak to move from his bed or even to write, architects came to his sick room, spread out their plans on his bed, and sought the advice that his (and only his) great knowledge, experience and judgment could give. To my personal knowledge, this went on to within a few days of his death.

'As a member of the R.I.B.A., Waldram did fine work, on the Council, as an examiner, and on many committees. He was well known not only by architects throughout the world, but also by surveyors and engineers throughout the illumination engineering field, as well as in the Courts. He was a first-class witness, who caused endless difficulties for unwary cross-examining counsel, a tenacious and indomitable fighter, a fine negotiator, and a powerful personality; but above all he was a splendid friend, cultured, witty and a grand character. As one who was either associated with or opposed to him more or less continuously for over twenty-five years, I feel his passing very deeply, particularly as it was by his direct encouragement and help that I personally became interested in the same subjects.'

Thomas Harold Hughes, F.S.I., A.R.C.A. [*F*], died, after a period of poor health, on 9 November last in Edinburgh. He was 62, and had won a deservedly high reputation in the extension and restoration of old buildings. His most recent work was at Exeter College, Oxford, where he had reconstructed the Rector's Lodging, and had built a new staircase inside Palmer's Tower. His work included two war memorials won in competition—Hull cenotaph and Hamilton war memorial. He designed extensions to St. Piran's School, Maidenhead, restored Wheatley Manor, Oxon., and, as surveyor to Merton College, Oxford, remodelled the Butterfield building. He also designed the new buildings for Corpus Christi College overlooking Merton Grove.

Mr. Hughes was for many years a member of the Board of Architectural Education and the Schools Committee, and had also served on the Visiting Board and the Prizes and Scholarships Committee.

Mr. L. Sylvester Sullivan [*F*] writes:

'Hughes was born in 1887, a son of Thomas Hughes, potter, of Staffordshire. He was educated at Alleyne's Grammar School, Uttoxeter, Staffs, and was articled to Jones and Hilton, of Burslem. From Burslem he gained a scholarship at the Royal College of Art under Professor Pite, in whose office he was later. He was also for a time with Sir Ernest George, R.A., until, on Professor Pite's nomination, he went to initiate the School of Architecture at the Robert Gordon's College, Aberdeen, but before this he had gained distinction at the Royal College of Art, where he became King's Prizeman; National Competition Prizeman; City of London Guilds' Institute Medallist; Prizeman of the Surveyor's Institute; Silver Medallist of the R.I.B.A.; and Travelling Scholar of the Royal College of Art.

During the war of 1914-18 Hughes served as a Captain in the Artists' Rifles attached to the Royal Engineers, finishing with a staff appointment at G.H.Q. in France, where he became noted for his work in map-reading and panoramic sketching, and was mainly, if not entirely, responsible for the Army Manual on Map Reading. Later he was a partner in Scotland with Sir John Burnet, R.A., but this was dissolved in 1922 on Hughes's acceptance of the Professorship of Architecture at the Royal Technical College and Director of Studies of the Glasgow School of Architecture—a position he held until he resigned on the score of ill-health about twenty years later. He was much loved by his many students, and was a stimulating companion with a somewhat dry wit. He was also a partner in the firm of Hughes and Waugh in Glasgow, and had an office in London.

Hughes was an exceptionally talented architect, widely read, erudite and with literary ability. It may be said of him that his work never marred any building it became his duty to handle—he rather enhanced and brought out the beauty of the old. He became engrossed in any project that engaged his attention—as, for instance, at Dollar Academy, where he found time to do the research for and write the biography of Playfair, its original architect. His work was his personal work, his draughtsmanship was clear and minutely accurate, while his colour was delightful. In conjunction with E. A. B. Lamborn he wrote *Towns and Town Planning*, published by the Clarendon Press in 1923, a work he had recently been engaged upon for a new and enlarged edition which, it is hoped, may shortly be published. His library is a choice collection containing some very rare volumes, which it would be regretful to disperse. His knowledge of architectural history was profound, and he could name the architect of most of the buildings he passed on his ways.

He married Edith Mary Wardlaw Burnet [*A*], a niece of Sir John Burnet, in 1918, and had three daughters, one of whom was recently elected Associate, R.I.B.A.

Hughes rarely talked about his work, and in addition to his principal architectural works mentioned above, the list below is probably by no means complete:

Chief Glasgow Buildings: Students' Union (Women); alterations to Senate Room, Lecture Rooms, etc.; extensions to Department of Botany; New Library and Reading Room; Institute of Chemistry—blocks for Organic, Physical and Bio-Chemistry; Sports Pavilion, all for the University. *Chief Oxford Buildings:* Hertford College "New Buildings"; Regent

Park College for the Baptists, Pusey Street and St. Giles; Taylorian Institute of Modern Languages, St. Giles; New Drapers Gallery and Lecture Room, Ashmolean Museum; University Press Extensions and New Buildings. *Other Buildings in Scotland and England* include the new Library for the Faculty of Procurators, science laboratories, schools, churches, sports pavilions, houses, flats, and war memorials. *Schemes in course of erection or preparation:* New dental department, war damage reparations, Block for Inorganic Chemistry, New Surgical Building, all for Glasgow University. Dollar Academy—enlargement and new buildings and lay-out; Springburn Primary School; Singer and Co. New Buildings; Faculty of Advocates extensions; Wolvercote Housing Scheme for the Oxford University Press; extensions and part reconstruction of the Oxford University Press, and Corpus Christi, Merton and Exeter Colleges.'

Hughes was Hon. Architect to St. Mary's Cathedral, Glasgow (Episcopal), and Consulting Architect to the Bodleian Library Commission.

Herbert H. Wigglesworth [*Ret. F*]. Mr. Wigglesworth, who was 83, started his architectural career in the office of Ernest George and Peto, and subsequently set up in practice in partnership with the late D. Barclay Niven. This partnership was responsible for a number of notable buildings, particularly in the London area. Among them was Hambro's Bank, Bishopsgate, which set a new style in the design of London banks. Mr. Wigglesworth's work for the Swedish Community, including his design for the offices for the Swedish Chamber of Commerce in Trinity Square and that for the Swedish Church in Marylebone, brought him recognition from the King of Sweden, who bestowed upon him the Order of Vasa. He was responsible for a good deal of domestic work in Surrey, and for the design of the East End Sailors' Mission building.

In 1927 the partnership was dissolved, and thereafter Mr. Wigglesworth collaborated with Mr. A. G. R. Mackenzie, A.R.S.A. [*F*], in the design of several buildings.

Mr. Wigglesworth was a gifted artist, and after his retirement in 1931 occupied himself with water-colour painting and was an active member of two Sussex art clubs.

Mr. Mackenzie writes:

"The passing of Herbert Wigglesworth on 24 August 1949 will revive memories for many architects of the partnership of Niven and Wigglesworth, who left their impress on the architecture, particularly the domestic architecture of a previous generation at a time when sincerity and faithfulness to the best traditions of the past were most needed. For them architecture was not the servant of the arts, as Ruskin was disposed to think, but the noblest of them all, being creative in the best sense of the word.

'Wigglesworth's record remains in the dignity of many of his structures, notably Hambro's Bank, in the City of London, the Swedish Chamber of Commerce and the Swedish Church in London. Many beautiful domestic buildings attest to the refinement of his style. Wigglesworth was one of a notable band who like Lutyens, Baker and Guy Dawber, came under the influence of Sir Ernest George at their most impressionable age. After studying at the Royal Academy Schools he travelled in Italy before commencing practice in London.

'He was a man of charming personality; to his assistants and to those who had the privilege of working with him he was a constant source of inspiration whether by enthusiastic appreciation or kindly, if sometimes drastic, but always constructive, criticism. He loved his art and possessed in no small degree the faculty of conveying his thoughts and of impressing his ideals on those working for him, and many will look back to the period spent in his office with gratitude to their master. He was a connoisseur and collector of *objets d'art*, had wide interests in many countries, and in his retirement made good use of his artistic talents. His genial temperament endeared him to a large circle of friends. Personally, I mourn the loss of a lifelong friend, upon whose unfailing interest and sage counsel I had learnt to rely.'

Clare Arnold Clayton-Greene [*F*]. Mr. Clayton-Greene died on 28 February last, and a short notice of his career was published in the March JOURNAL. Further particulars of Mr. Clayton-Greene's career have now been received from Mr. James Duxbury [*L*], who writes:

'A native of London, educated at Lancing, C. A. Clayton-Greene went to Newcastle-upon-Tyne early in life and took up architecture as his profession.

'Commencing in practice in 1899, he was in partnership for a few years before setting out on his own account in Sunderland, where he practised from 1905, and was greatly esteemed not only by his fellow architects, but also by all who knew him.

'He was the son and grandson of two clergymen, and his close connection with the church inspired his love of ecclesiastical architecture, and amongst his works were the designs for St. Gabriel's Church, Sunderland, and a Parish Church at West Hartlepool. His most recent work was the design for the Memorial Hall for Christ Church, Sunderland. He was the author of a very interesting short work on church buildings—*Churches and their building*. Mr. Clayton-Greene's architectural practice was varied, and he cultivated a style in domestic architecture well illustrated in a number of residences he designed in North-East England. In addition to domestic and ecclesiastical work he made considerable and varied contributions to architecture in the North, which included educational, industrial and public buildings.

'His other works were designs for the Sunderland Central Library, Museum and Art Gallery extensions, Monkwearmouth Central School, Sunderland, and a number of Miners' Welfare Buildings in the North-East. A keen admirer of the works of Sir Edwin Lutyens, he was most particular to detail and planning and made his lifework in architecture his hobby, even up to his sudden death, after making a wonderful recovery from a severe illness last year. His art and his many friends are the poorer today by reason of his death.'

James Hartley [*Ret. F*], founder and senior partner in the firm of James Hartley and Son of Skipton, Yorkshire, was 81 when he died on 22 August last. He was articled in Bradford, but practised in the early part of his career in Colne and in Morecambe, Lancashire, opening an office in Skipton in 1895 and remaining in active practice until his retirement in 1946. Mr. J. Everett Hartley [*L*], his son, who joined the firm in 1929, carries on the practice at Swadford Chambers, Skipton.

During his active practice, Mr. James Hartley designed the Whinfield Hospital, the extensions to Raikeswood Hospital, and two schools for the West Riding County Council, all at Skipton; and a school for the Westmorland County Council at Appleby as well as domestic work in the North and West Ridings. As a specialist in quantity surveying Mr. Hartley was an official surveyor to the Halifax Building Society.

Review of Films—14

The country of origin and date of release are given first. The film is in monochrome unless otherwise stated. The sizes (35 *mm. and* 16 *mm.*) *are given. Sound films are marked 'sd.', and silent 'st.' The running time is given in minutes.*
(F) indicates free distribution.
(H) indicates that a hiring fee is payable.

How Tree Roots Damage Buildings

Britain 1949. (*F*)

Summary. The danger of planting trees near buildings; the absorption of water resulting in the drying of the soil and consequent shrinkage and cracking, particularly characteristic of clay subsoil areas, such as are found in the South-East of England.

Diagrams show the effect which the loss of water has on clay soils at different levels. A large number of shots show cracked walls due to such earth shrinkage and necessity for shoring or underpinning. The suggested distances from buildings at which to plant various trees is indicated.

Appraisal. A factual account of the subject, well put together, with clear commentary and effective diagrams. While the film succeeds in making its point for architects, planners, etc., its effect on the general public might be most unfortunate. Although the stress is on the particular danger in clay subsoils, the predominating feeling left in the mind of a person unacquainted with the subject might well be that all trees near houses are dangerous. Such an erroneous impression might lead to much unnecessary cutting down or prejudice against tree-planting. Greater distinction could with advantage have been made between trees which are dangerous and others, including shrubs, which are less so. The unskilful method of planting a tree in the opening shot is an unfortunate example of lack of attention to detail.

16 sd. 10 minutes. The Director, Building Research Station, Garston, Watford, Herts.

Dry Rot in Buildings

Britain 1949. (*F*)

Summary. Occurrence of dry rot where the wood structure becomes damp. Illustration of typical sources of damp—blocked air vents, cracked downpipes, etc. Spread of dry rot from damp to dry parts provided original source of moisture maintained. Illustrations of likely positions in which dry rot may occur.

Laboratory test using cultured samples of fungus are used to demonstrate the action of various wood preservatives.

Remedial measures—removal of infected timber; sterilization of adjacent surfaces; blow-lamp and antiseptic solutions; preservative treatment of new timber; precautionary measures for avoiding outbreaks.

Appraisal. Whilst giving a broad outline of the subject, the film contains inaccuracies and is insufficiently detailed for a technical audience. The emphasis of the film is too much on the appearance and treatment of major outbreaks of dry rot rather than on the detection of outbreaks at an early stage.

16 sd. 12 minutes. Department of Scientific and Industrial Research, Rex House, 4/12, Regent Street, London, S.W.1.

Notes and Notices

NOTICES

Third General Meeting, Tuesday 3 January 1950 at 6 p.m.

The Third General Meeting of the Session 1949-50 will be held on Tuesday 3 January 1950 at 6 p.m. for the following purposes:

To read the minutes of the Second General Meeting held on 15 November 1949; formally to admit new members attending for the first time since their election.

To read the Council's Deed of Award of Prizes and Studentships 1950.

Mr. Hope Bagenal, D.C.M. [*F*], to read a paper on *Concert Halls*.

(Light refreshments will be served before the meeting.)

Session 1949-50. Minutes II

At the Second General Meeting of the Session 1949-50, held on Tuesday 15 November 1949 at 6 p.m.

Mr. Michael Waterhouse, M.C., President, in the Chair.

The meeting was attended by about 225 members and guests.

The Minutes of the Inaugural General Meeting of the Session 1949-50, held on Tuesday 1 November 1949, were taken as read, confirmed and signed as correct.

The following members attending for the first time since their election were formally admitted by the President:

AS FELLOWS:

R. E. Matthews, L. K. Watson.

AS ASSOCIATES:

D. W. Aitken, R. S. Barnes, D. J. Beere, E. L. Bent, O. J. Cox, C. N. Craig, D. L. Dyer, P. W. Flaxman, J. R. Glanfield, J. R. Harris, T. H. Hicks, J. R. H. Hudson, H. G. Hunt, Sydney Kelly, Miss Kathleen Kershaw, John Linton-Smith, T. M. Lupton, R. I. Macdonald, E. D. Maidment, C. B. Mears, L. H. Morgan, W. R. Morris, P. K. Moxley, R. C. N. Paul, G. A. Saville, F. J. Tingey, J. P. Tyrrell, E. M. Wainscott.

AS LICENTIATES:

J. R. C. Ashbourne, E. J. G. Betteridge, R. C. Chapman, J. F. Kennedy, W. C. Leslie-Carter, V. R. Pierce, C. P. Salmon, A. F. Smith, F. E. Tasker, E. A. Yates.

The Hon. Lionel Brett, M.A. [*A*], having read a paper on *Second Thoughts on Planning*, a discussion ensued, and on the motion of Professor Sir Patrick Abercrombie, M.A. (Liverpool), F.S.A., M.T.P.I. [*F*], seconded by Sir Stephen Tallents, K.C.M.G., C.B., C.B.E. [*Hon. A*], a vote of thanks was passed to Mr. Lionel Brett by acclamation, and was briefly responded to.

The proceedings closed at 7.55 p.m.

R.I.B.A. Distinction in Town Planning

The R.I.B.A. Distinction in Town Planning is by conferment only, and is limited to Fellows, Associates and Licentiates of the R.I.B.A.

The Distinction is the highest award in Town and Country Planning that the R.I.B.A. can bestow. It is solely intended for members of the R.I.B.A. who have made an outstanding contribution in the field of large scale planning. Recommendations are submitted to the Council by a Standing Committee set up for the purpose.

Personal applications by candidates will not be entertained; the name of a candidate must be submitted by three sponsors, themselves members of the R.I.B.A., who will be required to submit the following particulars on behalf of the candidate:

(*a*) details of professional qualifications and experience;

(*b*) evidence of his work and experience, such evidence consisting of a list of the candidate's work, together with references to professional journals in which the works have been illustrated; and such other evidence as may assist the Committee in making their recommendation to the Council.

Nominations should be made twice annually on 1 March and 1 November, and should be addressed to the Secretary, Royal Institute of British Architects, 66 Portland Place, London, W.1.

Members upon whom the Distinction has been conferred will be entitled to use the designation 'R.I.B.A. Distinction in Town Planning', and it is advised that this should be used in full, or the initials 'R.I.B.A. Dist. T.P.' after the initials F.R.I.B.A., A.R.I.B.A. or L.R.I.B.A., according to the class of membership to which they belong.

Cessation of Membership

Under the provisions of Bye-law 21 the following has ceased to be a member of the Royal Institute:

As Licentiate

Harold Ethelbert Woolley.

Cessation of Membership—Correction

On page 29 of the November JOURNAL the third Christian name of Mr. J. B. L. Harrison, who had ceased to be a Licentiate, was given incorrectly. The name should have been printed as John Bertram *Leslie* Harrison.

British Architects' Conference, Bristol, 7-10 June 1950

The next Annual Conference of the R.I.B.A. and its Allied and Associated Societies will take place at Bristol from 7-10 June 1950. Further details will be published in due course.

Correspondence with the Institute

In order to facilitate speedier attention to correspondence, and to relieve the staff of a great deal of research, it is particularly requested that members and students will kindly state in all correspondence with the Institute the class of membership (F, A, L or Student) to which they belong.

BOARD OF ARCHITECTURAL EDUCATION

The Acceptance of Pupils and Junior Assistants and the Probationership of the R.I.B.A.

The Board of Architectural Education have noticed that the practice still persists of members accepting pupils or junior assistants without satisfying themselves that such pupils or junior assistants have reached the necessary standard of general education for the probationership. Members are reminded that it is most important that they should not take boys or girls into their offices unless they possess one of the qualifications laid down.

A list of the recognized examinations can be obtained on application to the Secretary, R.I.B.A.

If the pupils or junior assistants have not obtained the necessary qualifications they should be warned that it will be essential for them to do so if they wish eventually to become members of the R.I.B.A. or to be admitted to the examinations which are recognized as a qualification for admission to the Register of Architects.

An announcement will be made in the near future regarding the requirements of the R.I.B.A. in relation to the new General Certificate of Education which will come into operation in 1951.

Examination for the R.I.B.A. Diploma in Town Planning

At the Examination held in July 1949 the following candidate was successful and has been awarded the R.I.B.A. Diploma in Town Planning: Jarratt, Herbert Stanley [*A*].

COMPETITIONS

Competition for the Interior Design of the Modern Public House

The Architectural Press, Ltd., invite architects and designers to submit designs in competition for four bars in contemporary public houses.

Assessors: Mr. Hugh Casson, M.A. [*F*], Mr. J. S. Eagles, M.B.E., B.A. (nominated by the Brewers' Society), Mr. R. Furneaux Jordan [*F*], Mr. E. B. Musman, B.A. [*F*], Mr. J. M. Richards [*A*] (representing the Editors of THE ARCHITECTURAL REVIEW).

Premiums: £500, £250, £100.

Last day for submitting designs: 28 February 1950.

Conditions were printed in the October number of THE ARCHITECTURAL REVIEW.

Competition in Connection with York Festival 1951

The York Festival Society Ltd. invite architects resident in Great Britain or Eire to submit designs in competition for a block of flats in Paragon Street, York, to be built in connection with the York Festival of 1951.

Assessor: Mr. W. A. Eden, M.A., F.S.A. [*A*].

Premiums: £250, £150, £75.

Last day for submitting designs: 18 January 1950.

Conditions may be obtained on application to Keith Thomson, Esq., Artistic Director, York Festival 1951, 1 Museum Street, York. Deposit £2 2*s*.

Whitehaven: Arts Centre

The Whitehaven Corporation invite architects resident in this country to submit designs in competition for the Public Hall and Restaurant, which they propose to erect in Whitehaven.

Assessor: Mr. Harold A. Dod, M.A. [*F*].

Premiums: £300, £250, £175.

Last day for submitting designs: 15 March 1950.

Conditions may be obtained on application to the Town Clerk, Town Hall, Whitehaven, Cumberland. Deposit £2.

Competition for War Memorial for Victoria College, Jersey

The Association of Old Victorians invite architects of British nationality to submit designs in competition for proposed War Memorial Buildings in the form of a small Art School at Victoria College, Jersey, C.I.

Assessor: Mr. A. E. O. Geens [*F*].

Premiums: £75, £50, £25.

Last day for submitting designs: 3 April 1950.

Last day for questions: 31 December 1949.

Conditions may be obtained on application to Mr. A. H. Worrall, Hon. Treasurer, The Association of Old Victorians, 25 Cleveland Road, Jersey, C.I. Deposit £1 1*s*.

Civic Hall, Guildford

The Guildford Borough Council invite architects registered in the United Kingdom to submit designs in competition for the Civic Hall which they propose to erect in Guildford.

Assessor: Mr. G. A. Jellicoe [*F*].

Premiums: £1,000, £500, £250.

Last day for submitting designs: 30 April 1950.

Conditions may be obtained on application to the Town Clerk, Municipal Offices, Guildford. Deposit £2 2*s*.

Norfolk Education Committee: Competition for a County Modern (Secondary) School at Hunstanton
The Norfolk Education Committee invite architects resident in Great Britain to submit designs in competition for a County Modern (Secondary) School at Hunstanton to accommodate 450 mixed pupils.
Assessor: Mr. Denis Clarke Hall [*F*].
Premiums: £500, £250, £150.
Last day for submitting designs: 28 February 1950.

Conditions may be obtained on application to Mr. W. O. Bell, Chief Education Officer, Norfolk Education Committee, Stracey Road, Norwich. Deposit £2.

Competition for Medical Buildings Extension, Edinburgh University
The University of Edinburgh invite architects to submit designs in competition for an extension to the Medical Buildings to be erected on a site on the north side of George Square, Edinburgh.
Assessor: Mr. A. G. R. Mackenzie, A.R.S.A. [*F*].
Premiums: 1,000 gns., 600 gns., 300 gns.
Last day for submitting designs: 2 September 1950.
Last day for questions: 18 February 1950.

Conditions may be obtained on application to the Secretary of the University, Edinburgh. Deposit £2 2*s*.

Competition for the Design of Concrete Bridges
The Cement and Concrete Association invite engineers and architects to submit designs in competition for prestressed, reinforced or plain concrete bridges over motorways.
Assessors: Sir Percy Thomas, O.B.E. (Past President); Mr. J. Cuerel, B.Sc., M.I.C.E.; Mr. A. Moller, M.I.Struct.E.; Mr. E. John Powell, M.I.C.E., M.I.Mun.E.; Mr. J. Reed, B.Sc., M.I.C.E., M.I.Struct.E., M.Cons.E.
Premiums: £500, £300, £200.
Last day for submitting designs: 31 May 1950.
Last day for questions: 31 December 1949.

Conditions may be obtained on application to the Cement and Concrete Association, 52 Grosvenor Gardens, S.W.1. Applications must be accompanied by a postal order for one shilling.

ALLIED SOCIETIES

Sheffield, South Yorkshire and District Society of Architects and Surveyors. Following the death on 2 November 1949 of Mr. C. S. Sandford, who was elected President of the Society in 1948, Professor Stephen Welsh, M.A. [*F*], will serve as Acting President for the remainder of the present Session of the Society.

North Staffordshire Architectural Association. Secretaries: Messrs. Henshall, Garner and Co., Accountants and Auditors, Glebe House, Glebe Street, Stoke-on-Trent.

The Hampshire and Isle of Wight Architectural Association. President, Mr. Ernest Bird [*F*]. *Central Chapter.* Chairman, Mr. H. G. Baker [*L*]. *Eastern Chapter.* Chairman, Mr. R. A. Thomas [*F*]. *Western Chapter.* Chairman, Mr. W. G. Seaton [*A*]. *Isle of Wight Chapter.* Chairman, Mr. V. Aldridge [*F*].

Nottingham, Derby and Lincoln Architectural Society
The Annual Dinner of the Society was held at the Black Boy Hotel, Nottingham, on 21 October. Among the official guests were Mr. A. W. Kenyon, C.B.E. (Vice-President, R.I.B.A.), the Bishop of Derby, the Lord Mayor of Nottingham, the Sheriff of Nottingham, Mr. Pembroke Wicks, C.B.E., LL.B. (Registrar, A.R.C.U.K.), and Mr. B. L. Hallward, M.A. (Vice-Chancellor, Nottingham University).

Mr. C. F. W. Haseldine [*F*], President of the Society, proposed the toast of 'The Cities of Nottingham, Derby and Lincoln', and this was replied to by the Lord Mayor of Nottingham and the Mayor of Derby. Mr. Haseldine spoke of 'a memorable year of events and developments in the three centres, Nottingham, Derby and Lincoln'. He hoped the author of the winning design for the Nottingham University new Hall of Residence would be a member of their Society.

The Bishop of Derby, who submitted the toast of 'The R.I.B.A. and Allied Societies', paid tribute to Nottingham's civic enterprise in connection with the University's 'magnificent scheme'; he thought a new residential university would some day rank in leadership and learning with Oxford, Cambridge and Durham, and would carry on their great traditions. Mr. A. W. Kenyon, C.B.E. (Vice-President, R.I.B.A.), replied to the toast. He urged architects 'not to desert their drawing-boards, the symbol of their craft, for big administrative desks', which could prove the negation of great architecture.

'The Guests' was proposed by Mr. T. Nelson Cartwright, D.S.C. [*F*], and was replied to by Mr. C. G. Campbell (President, Nottingham Chamber of Commerce) and Dr. A. H. Briggs of Lincoln.

Devon and Cornwall Architectural Society
The Annual Dinner of the Devon and Cornwall Architectural Society was held at the Grand Hotel, Torquay, on 28 October. The President of the Society, Mr. H. M. R. Drury [*F*], was in the Chair, and the chief guests were the President, R.I.B.A., and Mrs. Waterhouse; among the other guests were the Mayor and Mayoress of Torquay, the Mayor and Mayoress of Exeter, the Sheriff of Exeter, and the Deputy Lord Mayor and Lady Mayoress of Plymouth.

The loyal toast was proposed by the President of the Society. The toast to the R.I.B.A. was proposed by the Mayor of Torquay, and responded to by the President of the R.I.B.A., who gave a very interesting and amusing account of his recent tour in America. The toast to the Devon and Cornwall Architectural Society was proposed by the Mayor of Exeter and responded to by Mr. Drury. Replying to the Mayor's toast, Mr. Drury stressed the real and lasting value of good architecture, and hoped that the rising generation of architects would be given a fair chance. The toast of 'Our Guests' was proposed by Mr. H. J. Hammick [*L*], senior Vice-President of the Society, and responded to by the Sheriff of Exeter.

South Eastern Society of Architects: Students' Competitions: Prize Distribution: Some 200 students and visitors attended the Annual Prize Distribution in the R.I.B.A. Jarvis Memorial Hall on 27 November, with the Society's President, Mr. Arthur Stedman [*F*], in the Chair.

Mr. Hugh Casson, M.A. [*F*] gave the criticism of the work on view which this year reached an exceptionally high standard. He particularly commended the sketches for their quality and sincerity. Mr. Martin S. Briggs [*F*], Chairman of the Board of Architectural Education, presented the prizes, after which Mr. Hill, a student from Hastings, proposed a vote of thanks to Mr. Briggs. Mr. Stanley Livock [*F*], Chairman of the Education Committee, thanked Mr. Casson for his work as critic and Mr. F. E. Green [*F*], recently appointed Head of the Brighton School, expressed the gratitude of all to the President for his interest and enthusiasm.

Students throughout the Society's area competed, and six schools were represented.

GENERAL NOTES

A.R.C.U.K.—Maintenance Scholarships in Architecture
The Architects' Registration Council of the United Kingdom offer for award in June 1950 certain Maintenance Scholarships in Architecture. The Scholarships will consist of a grant for the payment of one-third of the School fees and, when necessary, a maintenance allowance. The Scholarships will be renewable from year to year until the student has finished his or her School training. They will be available for Students of British nationality who could not otherwise afford such training to enable them to attend Architectural Schools approved by the Council. The Scholarships will be available both for students who have already begun their training and for students wishing to begin their training. Scholarships will not be granted to Students who will be less than 17 *years of age on* 1 *October of the year in which the examination is taken.*

Particulars and forms of application may be obtained from : The Secretary to the Board of Architectural Education, Architects' Registration Council of the United Kingdom, 68 Portland Place, London, W.1.

Copies of previous years' examination papers may be obtained on payment of 6*d*.

The closing date for the receipt of applications, duly completed, is 31 January 1950.

Commonwealth Fund Fellowships
The Commonwealth Fund of New York offers annually to graduates of British Universities a number of Fellowships tenable for one year in the graduate schools of certain Universities in the United States of America. These Fellowships are open to men and women. Each Fellowship includes provision for tuition and living expenses with allowances for ocean passage and travel in the United States during vacations.

Graduates of British descent and under thirty-five who can produce evidence of proficiency in some recognized branch of University learning are eligible.

Applicants are reminded that after 1949 the closing date for applications for Fellowships will be 15 December in each year.

Forms of application and other information can be obtained from the Secretary of the Commonwealth Fund Fellowships, 35 Portman Square, London, W.1.

Fire Grading of Buildings
A special course of eight weekly lectures on this subject is to be held at the L.C.C. Brixton School of Building, beginning Wednesday 11 January at 6.30 p.m. The lecturers are Mr. R. C. Bevan, M.A., B.Sc. (Eng.) of the Building Research Station, Mr. D. I. Lawson, M.Sc., M.I.E.E., F.Inst.P., and Mr. K. R. Lack [*A*].

Architectural Review 1939-45
It is announced in U.N.E.S.C.O. Bulletin for Libraries, November 1949, that THE ARCHITECTURAL REVIEW is amongst some periodicals which U.N.E.S.C.O. is considering reprinting for the war years (i.e. September 1939-December 1945). It is suggested that any architects or architectural libraries needing any of these issues should immediately place a firm order with U.N.E.S.C.O's. 'Libraries Division', 19 Avenue Kleber, Paris XVIe, as the reprinting can only be done if 100 subscriptions for each individual issue are received.

Notes from the Minutes of the Council

MEETING HELD 1 NOVEMBER 1949

Appointments

(A) R.I.B.A. Architecture Bronze Medal: The Royal Incorporation of Architects in Scotland: R.I.B.A. Representative to Serve on Jury to Consider Award: Mr. A. Newton Thorpe [*F*], President, York and East Yorkshire Architectural Society.

(B) Committee to Review Code of Practice 113 and British Standard 449—Structural Steel: R.I.B.A. Representative: Mr. F. L. Felgate [*A*].

Mr. Adrian O. Ashton [*A*]**:** The President extended a hearty welcome on behalf of members to Mr. Adrian O. Ashton [*A*], President of the New South Wales Chapter of the Royal Australian Institute of Architects, who was attending the Council meeting as the nominated representative of the Royal Australian Institute. Mr. Ashton, in thanking the President, said he brought the good wishes and greetings of the President and all members of the Royal Australian Institute.

The Honorary Corresponding Membership: The Secretary reported that M. Georges Dedoyard and M. Alexis Dumont had accepted the Council's nomination for election as Honorary Corresponding Members for Belgium.

Federation of Malaya Society of Architects: The Honorary Secretary reported that arrangements had been completed locally by which the former Kuala Lumpur Branch of the Institute of Architects of Malaya, whose headquarters were in Singapore, had assumed independent status under the title of the Federation of Malaya Society of Architects with the consent of the parent Institute. The Council approved in principle an informal application of the new Society for alliance with the R.I.B.A. It was agreed that formal alliance would be approved when various matters in connection with the rules of the new Society and the areas of the two Malayan societies had been settled by mutual agreement.

Mr. Edward Maufe, R.A., Hon. LL.D. [*F*]**:** The Secretary reported that the Queen's University of Belfast had conferred the honorary degree of Doctor of Laws on Mr. Edward Maufe, R.A. [*F*]. The Secretary was instructed to convey to Mr. Maufe the sincere congratulations of the Council.

Gift Parcels: The Royal Australian Institute of Architects: The Secretary reported that for the third year in succession the Royal Australian Institute of Architects had asked for the names and addresses of 500 members or dependants to whom they would send gift parcels. Names were being sent by the Architects' Benevolent Society.

A very hearty vote of appreciation and gratitude was passed by the acclamation of all present in favour of the Royal Australian Institute of Architects.

Membership: The following members were elected: as Fellow, 1; as Associates, 16. Students: 53 Probationers were elected as Students.

Applications for Election: Applications for election were approved as follows: *Election 29 November* 1949: as Fellows, 14; as Associates 396; as Licentiates, 7. *Election 7 March* 1950 (*Overseas Candidates*): as Fellow, 1; as Associates, 30.

Resignation: The following resignation was accepted: George Arnold Coombe [*L*].

Applications for Transfer to Retired Members' Class under Bye-law 15: The following applications were approved: as Retired Licentiates: Harold Oswald Prestwich, Charles Stanley Thomas.

Obituary: The Secretary reported with regret the death of the following members: James Hartley [*Ret. F*], Sholto Douglas [*L*], Thomas Bowhill Gibson [*L*], William Job Warde [*Ret. L*].

Membership Lists

ELECTION: 1 NOVEMBER 1949

The following candidates for membership were elected on 1 November 1949.

AS FELLOW (1)

Harvie: Edythe Ellison (Miss) [*A* 1939], Melbourne, Victoria, Australia.

AS ASSOCIATES (16)

Beere: Douglas Jocelyn, B.Arch. (N.Z.), Wellington, New Zealand.
Bolin: Beverley Louise (Miss), Tranmere, South Australia.
Browne: Margaret Rowan (Miss), B.Arch. (Sydney), Gordon, N.S.W., Australia.
Cameron: John Alexander, Hurstville, N.S.W., Australia.
Cheesman: Wilfrid Henry, Johannesburg, S. Africa.
Duncan: Michael, Sydney, N.S.W., Australia.
Floyd: Alan Thomas, Dip.Arch. (Melbourne), East Brighton, Victoria, Australia.
Green: Rodney Martin, B.Arch. (Cape), Stellenbosch, Cape Province, S. Africa.
Herbert: Gilbert, B.Arch. (Rand), Johannesburg, S. Africa.
Keet: Barend Bartholomeus (Jnr.), B.Arch. (Cape), Stellenbosch, Cape Province, S. Africa.
Kelly: Sydney, Manly, N.S.W., Australia.
Macdonald: Roderick Ian, B.Arch. (Hons.) (Melbourne), Melbourne, Victoria, Australia.
Malanot: Lorenzo, Bankstown, N.S.W., Australia.
Morgenstern: Jacques, B.Arch. (Rand), Johannesburg, S. Africa.
Partridge: Bruce Fitzgerald, Dip.Arch. (Brisbane), Sydney, N.S.W., Australia.
Swan: Peter Reynolds, Sydney, N.S.W., Australia.

ELECTION: 29 NOVEMBER 1949

The following candidates for membership were elected on 29 November 1949.

AS FELLOWS (14)

Carr: David [*A* 1930].
Fidler: Alwyn Gwilym Sheppard, M.A., B.Arch., A.M.T.P.I. [*A* 1933], Crawley, Sussex.
Hurden: Stanley Allen [*A* 1930].
Slater: Martin Johns [*A* 1919], Ipswich.
Stewart: Arthur Ammerman [*A* 1932].
Todd: George Richard [*A* 1934], Torquay.
Tripe: Anthony Charles [*A* 1934].

and the following Licentiates who have passed the qualifying Examination:

Elder: Henry, M.B.E., Wilmslow, Cheshire.
Kelsey: Alfred Edward.
Korn: Arthur.
Riss: Egon, Edinburgh.

and the following Licentiates who are qualified under Section IV, Clause 4 (*c*) (ii) of the Supplemental Charter of 1925:

Brady: Kenneth Russell, Manchester.
Eltringham: Thomas Rutter, O.B.E.
Walker: Cyril Herbert, O.B.E., M.C.

AS ASSOCIATES (396)

Abbott: Ian Harry, Birmingham.
Abbott: Leonard Alfred, Purley, Surrey.
Adam: Andrew, Dip.Arch. (Glasgow), Fairlie, Ayrshire.
Adams: Brian Lemeslie.
Adams: Kenneth George, Oxford.
Ambler: Michael Midgley, Halifax, Yorks.
Anderson: Alexander Berry, Dundee.
Archibald: William Dixon, Middlesbrough.
Ash: Jean Mary (Mrs.), B.Arch. (Hons.) (Dunelm), Coventry.
Assomatites: Andrew John.
Aylwin: John Maxwell, Farnham.
Badnitz: Leslie Spencer.
Bailey: Claude Henry Ralph, Birmingham.
Baker: Ian Crampton.
Ballantyne: Alan Robert.
Barber: Harold John, Diss, Norfolk.
Barker: Brian Ashley, Luton.
Barnett: Clifford Harry, B.Arch. (Hons.) (L'pool), Hull.
Barnett: Geoffrey Richard, Dip.Arch. (B'ham), Birmingham.
Barrie: Edward Alexander.
Barrow: Dennis Ronald, Nottingham.
Bartlam: Walter Ashley, Dip.Arch. (B'ham), Elgin, Morayshire.
Bartlett: Peter Geoffrey, Dip.Arch. (Nottingham), Nottingham.
Baxter: Diana Anita (Miss).
Beanland: Gerald Roy, Leeds.
Beaven: Leonard, Barry, Glam.
Belcher: Daphne Anne (Miss), Worthing.
Bellamy: Alfred John Spencer, Beeston, Notts.
Bethell: George Alfred, Sheffield.
Bett: Malcolm James, Dip. Arch. (Dundee), Dundee.
Biggs: Alfred George, Newport, I.O.W.
Bird: Arthur Clarence, Birmingham.
Blackmore: John Wilfrid, Hull.
Blanchard: Melville, Sunderland, Co. Durham.
Bleasdale: Raymond John, Bradford, Yorks.
Bliss: Terence Warren.
Bloom: Victor Jack.
Boden: Allen, Sheffield.
Borthwick: Peter Lamont Burnside, Glasgow.
Boston: Peter Shakerley, M.C., M.A.(Cantab), B.Arch. (Hons.) (L'pool), Liverpool.
Bottomley: Eric Michael, B.Arch. (Liverpool).
Boucher: Ernest John Townsend, A.F.C., Penarth, Glam.
Bourne: Cecil John, Honeybourne, Worcestershire.
Bourne: Kenneth Charles, Honeybourne, Worcestershire.
Bowyer: Jack Trory, Hastings.
Boyd: Douglas Gordon, B.Arch. (L'pool).
Brandt: Alan James.
Brett: Elizabeth Mary (Miss), Tewkesbury.
Bright: Geoffrey William, Cardiff.
Britain: Rossiter Frank.
Brodie: Ronald Fordyce, Leeds.
Broom: John Fields, Cheltenham, Glos.
Brotherton: Frank Philip, B.Arch. (L'pool), Llandudno, N. Wales.
Brown: James, Eastbourne, Sussex.
Browne: Denis Martin.
Bryant: William Sandy.
Bullivant: Dargan Brown, Dip.Eng. (Hons.), Birmingham.
Bullock: William Gordon Sturgess, Stockport, Ches.
Burn: Frederick Atkinson.
Burton: John Thomson, Dip.Arch. (Dundee), Dundee.
Buttenshaw: Peter Edward, Sutton Coldfield.
Campbell: Frank, Dip.Arch. (Glasgow), Chryston, Lanarkshire.
Carter: Geoffrey Brian, Blackpool.
Carter: Gerard, Salford, Lancs.
Chambers: Denis Patrick Peter, Bradford, Yorks.
Chatterton: Reginald, Huddersfield, Yorks.

Cherry: Peter Harold, Welwyn, Herts.
Clamp: Hugh John Derek Mence, B.A. (Arch), Woodford Green, Essex.
Clark: James Aubrey Vivian.
Clarke: Peter Trevor, Dip.Arch. (Birmingham), Bristol.
Clarke: William Alfred.
Clegg: Willie Hudson, Leeds.
Close: Alan, Wakefield, Yorks.
Coles: Patrick James, Poole, Dorset.
Colquhoun: Alan Harold.
Coombe: Denys Baynham, Petersfield, Hants.
Cooper: Francis Gough.
Corless: Richard Bolton, Dip.Arch. (Birmingham), Lowestoft.
Cotton: Michael James, Dip.Arch. (L'pool), Liverpool.
Court: Neville Victor Comber, Brierley Hill, Staffs.
Cousens: Edgar Norman.
Cox: Robert Charles.
Cox: Sidney Walter.
Crichton: Ada Agnes (Miss), B.Arch. (Hons.) (Dunelm), Tynemouth.
Crispin: Doreen Elaine (Miss), Walsall, Staffs.
Crookall: Arthur Lawrence, B.Arch. (L'pool), Cambridge.
Crowe: Eleanor Marian Wyndham (Miss), Chester.
Crowe: Michael Finbar, Cork.
Cunningham: Joseph Stanley, Dip.Arch. (L'pool), Preston, Lancs.
Currall: John Edward, Stafford.
Cuthbertson: Pamela (Miss), B.Arch. (L'pool), Blackpool, Lancs.
Daines: Edward Joseph, Cambridge.
Dale: Albert, Dip.Arch. (Nottingham), Breadsall, Derbyshire.
Daley: Arthur Russell, Newcastle-on-Tyne.
Dando: Kenneth Walter, Bristol.
Daniels: Leonard, Congleton, Cheshire.
Darracott: Thomas Michael, Farnham, Surrey.
Davies: Anthony Butler.
Davies: Frederick Charles, Crediton, Devon.
Davies: Geoffrey, Surbiton, Surrey.
Davies: Olbris, Abertysswg, Mon.
Davis: Gerald.
Davison: Percy Robert.
Dawson: Geoffrey Pell.
Dearden: Jack, D.F.C., B.Arch. (L'pool), Clarkston, Renfrewshire.
Derham: Reginald Douglas, Edinburgh.
Devlin: David, Hoddesdon, Herts.
Dickinson: Stanley Park.
Dor: Leonard Doiban.
Duncan: Kenneth Cavendish, Dip.Arch. (L'pool), Leeds.
Duncan: Ronald Patrick, Whitley Bay, Northumberland.
Dunworth: James William, Grangemouth, Stirlingshire.
Durrant: Raymond Albert, Eastbourne, Sussex.
Eales: David John.
Easton: Geoffrey John.
Eber: Claude Anthony.
Ebery: Evan Wilfred, Aldridge, Staffs.
Edge: Derek Mattison, Cambridge.
Edmunds: Joyce May (Miss), B.A. (Hons.Arch.) (M'chester), Pendlebury, Lancs.
Edwards: John Walter, Ringmer, Sussex.
Elliott: George Frederick, Birmingham.
Ellis: David Edmund, B.A. (Cantab), Hornsea, E. Yorks.
Ellis: James Christopher.
Elston: Mary (Miss), Dip.Arch. (Leeds), Leeds.
Eva: David Collingwood, Dip.Arch. (L'pool), Liverpool.
Evans: Elizabeth Sara Naunton (Miss), Tonypandy, Glam.
Evans: Philip Charles.
Fairhurst: Harry Marshall, B.A.(Cantab), Alderley Edge, Cheshire.
Feilden: Bernard Melchior.
Firshman: Harry.
FitzPatrick: Frederick Edward, B.Arch. (Dublin), Dublin.
Forrest: Anthony Mark Stewart, Saltburn-by-the-Sea, Yorks.
Forsyth: Peter Orr, Dip.Arch. (Glasgow), Galston, Ayrshire.
Foyster: Harry, Chesterfield.
Franklin: Eric Sutton, Aldbourne, Wiltshire.
Freeborn: Rodney Walter, Worcester Park, Surrey.
Gardner: Geoffrey, Sheffield.
Gazzard: Major Roy Albert James.
Gillatt: Donald Hooke, Peterborough.
Goff: Captain John Freeman, Northampton.
Gold: Rosemary Wyndham (Miss), Stansted, Essex.
Gooch: Michael Edwin.
Grant: Ian Dawson.
Greenhalgh: Alan Hulse, Beverley, E. Yorks.
Greenhalgh: Geoffrey James, Chorley, Lancs.
Greenwood: Robert Michael, B.Arch. (L'pool), Thirsk, Yorks.
Gregory-Jones: David Michael.
Gunning: Edward Anthony, Newcastle-upon-Tyne.
Guthrie: David Robert, B.Arch. (Hons.) (L'pool), Mayfield, Sussex.
Hale: Alan Maurice, Crowthorne, Berks.
Hale: Gordon, Sheffield.
Hall: Eric Walker, Edinburgh.
Halse: George Alexander, Sidmouth, Devon.
Halstead: Leslie John Pyke.
Hamilton: William Morrow, Dip.Arch. (Glasgow), Saltcoats.
Hardy: Alexander Charles, Newcastle-upon-Tyne.
Hare: Murray Sidney, Ipswich, Suffolk.
Harrison: John Philip, Selsdon, Surrey.
Hart: Eric Morris, Durham.
Hartshorn: Anne Gwynneth Jacqueline (Miss).
Hatherly: Victor John Cecil, Newport, Mon.
Hegan: H. Russell, Dip.Arch. (Birmingham), Wolverhampton.
Henderson: Anthony George.
Hewitt: Stanley Nelson, Exeter.
Hewling: Michael.
Hey: Raymond John, Headington, Oxford.
Hilton: Douglas Bert, Dip.Arch. (Birmingham), Banbury, Oxon.
Hobson: James Ronald, Leeds.
Horsbrugh: Patrick Bethune.
Hosford: Richard Cottrell, Chelmsford, Essex.
Hubbard: Philip Peter, B.A. (Hons. Arch.), Manchester.
Hughes: Frances Heather (Miss), Edinburgh.
Hunt: Anthony Sidney, New Barnet, Herts.
Hunt: Douglas, Newport, Mon.
Hutchinson: Donald, B.A. (Hons. Arch.) (Sheffield), Rotherham.
Jack: William Archibald Park, Glasgow.
Jenkins: John Marshall, Dip.Arch. (Dist.) (Wales), Cardiff.
Jenkins: Michael Lynn, B.A. (Arch.) (Lond.).
Jennett: Frederick Stuart, Dip.Arch. (Dist.), (Wales), Pontypridd, Glam.
Jesseman: Alan Godfrey, Bristol.
Jobson: Robert Frederick, Swindon, Wiltshire.
John: Aneurin, Pontyclun, Glam.
Johnson: Arthur Robert, Stockport, Cheshire.
Johnson: Harold, Little Eaton, Derbyshire.
Johnson: Henry Roy, Sheffield.
Johnson: John Stuart, Gainsborough, Lincs.
Johnson: Roger Kirk Hayes, B.Arch. (Hons.) (L'pool), St. Bees, Cumberland.
Johnston: Hugh Norman Thomson, Glasgow.
Johnstone: Douglas Edward.
Jones: Richard Stanley, Coventry.
Jones: Sydney Cooper, B.A. (Hons. Arch.) (Manchester), Southport.
Kay: Ernest, Salford.
Kearsley-Woolley: Stephen, B.A., Monton Green, Lancs.
Kelt: Andrew.
Kidd: William Jacques, B.Arch. (Hons.) (L'pool), Liverpool.
Kinch: Vernon Gilbert, Cardiff.
King: Gerald William, Ampthill, Bedford.
Kingham: Norman Frederick, Dip.Arch. (Dist.) (L'pool), Wallasey, Cheshire.
Kluge: Edward James, B.Arch. (Wales), Swansea.
Knight: John Owen, Dip.Arch. (N'ham), Ripley, Derbyshire.
Lacey: Charmian Nancy (Miss), Bedford.
Lant: Richard John, Hull.
Lawson: Eric Thomas Rosling.
Lawson: Margaret (Miss), B.A. (Arch.) (Lond.).
Leadbeater: Gertrude Mary (Miss), Oldham.
Leifer: Alec Nathan.
Lewis: Barbara Valerie (Mrs.).
Lewis: Tyssil Wesley George, Bristol.
Lewis: Wynn Huws, Dip.Arch. (Wales), Gowerton, Glam.
Liley: Henry, M.B.E., Dip.Arch. (Leeds), Cleckheaton, Yorks.
Lister: Herbert Robert, Middlesbrough.
Lloyd: Edward Cecil, Dip.Arch. (Leeds), Stoke-on-Trent.
Locke: Eirene Sylvia (Mrs.).
Lodge: Dennis, Leeds.
Long: Cyril Geoffrey, Ashtead, Surrey.
Longworth: Henry Anthony, Poulton-le-Fylde.
Looker: Charles George, Kingston-upon-Thames.
Lovatt: Thomas, Newcastle, Staffs.
Lovelock: Nigel Walter, Cheltenham.
Lowe: Robert Hutton Black, Dip.Arch. (Glasgow), Troon, Ayrshire.
McArtney: John William, Sidcup, Kent.
McCulloch: Allan Gibson.
Mackay: Alexander Thomas Ross, Cardiff.
McLindon: Gerald Joseph, B.Arch. (Hons.) (L'pool), Liverpool.
Marshall: Herbert Dennis, Herne Bay.
Masters: Frederick George.
Mathias: Peter, B.Arch. (L'pool), Liverpool.
May: William Jack, Guildford.
Mayne: Richard Victor, Richmond, Surrey.
Melville: Ian Scott, Liverpool.
Mennell: Christine Ann (Miss), Leeds.
Messervy: George Keith.
Michell: Howard Norman.
Milner: Alec, Oldham.
Milner: John Michael, Dip.Arch. (Leeds).
Milnes: John Howard.
Mitchell: John, Lochgelly, Fife.
Montgomerie: Hector Gordon, M.C.
Moore: Alexander, Nottingham.
Morris: Cyril Moss, B.Arch. (L'pool), Chester.
Morton: Leslie John.
Moscardini: Anthony, Dip.Arch. (Glasgow), Prestwick, Ayrshire.
Moss: Raymond Osborne, Sheffield.
Moxley: Raymond James, Oxford.
Munro: Archibald Macnab, Dip.Arch. (Glasgow), Fenwick, Ayrshire.
Nash: Peter Rothwell, Huddersfield.
Nesbitt: Thomas Hunter Michael.
Newnham: Peter Arthur.
Nixon: Audrey Vivienne Jean (Miss), Sanderstead.
Norrish: Kenneth Victor, Birmingham.
Nunney: Joan Caroline (Miss), Carshalton.
Nutter: John Raymond, Manchester.
Oldham: Harold.
Oliver: James, Dip.Arch. (Glasgow), Dalry, Ayrshire.
Orange: Joseph Morris, Blyth, Northumberland.
Ormondroyd: William, Norwich.
Orton: Kenneth Barnes, Heywood, Lancs.
Owen: Ivan Dale, Cardiff.
Packer: Douglas Arthur, Andover.
Paine: Charles Nelson.
Palmer: Norman [*L*], Ipswich.
Parker: Clince, Dip.Arch. (L'pool), Liverpool.

Parsloe: Rosemary Jean (Miss), Edenbridge, Kent
Parton: Michael Henry John.
Pearson: Stanley Antony, Dip.Arch. (Birmingham), Smethwick, Staffs.
Pease: The Hon. George, by Lochgilphead, Argyll.
Penn: John, Woodbridge, Suffolk.
Perlston: Laurence Jules.
Pert: Keith Giscard, Wickham Market, Suffolk.
Phelps: Edward Leslie, Dip.Arch. (Dist.) (Wales), Cardiff.
Pigg: Arthur Lister, Tynemouth.
Pinnock: John Sydney Frederick.
Prytherch: William Tecwyn, Liverpool.
Punter: Leslie, Wolverhampton.
Purkis: Arthur Edgecombe, Walton-on-Thames.
Pyper: Jeffery Maurice.
Race: Roger Evan, Leatherhead.
Radford: Roger Nicholas, B.A.(Cantab), Cambridge.
Rae: Colin Eric.
Ralph: Thomas Carlyle.
Rawlinson: John Albert.
Redmond: Eoin O'Mahony, B.Arch., Dublin.
Roake: Bertha (Mrs.).
Rose: John Frederick, Dip.Arch. (Sheffield), Sheffield.
Rose: Katherine Elizabeth (Miss), Windermere, Westmorland.
Ross: Campbell Langley Munro, Bickley.
Rowe: Percy Valentine, Sale, Cheshire.
Rowland: Gordon Mayhew B.A. (Arch.) (Lond.), Watford, Herts.
Rusha: Charles Henry.
Russell: Dennis Bertram, Dip.Arch. (Glasgow), Sauchie, Alloa.
Russell: Victor William, Birmingham.
Saunders: Kenneth Charles.
Scorer: Hugh Segar.
Scott: Gordon Robert, Dip.Arch. (Glasgow), Milngavie, Scotland.
Scott: Norman Keith, B.Arch. (Hons.) (L'pool), Preston.
Serne: Sylvia Antoinette (Miss).
Sewell: William Allan Elliott, Old Buckenham, Norfolk.
Shannon: Arthur Frederick.
Shaw: Kenneth Vincent, Shildon, Co. Durham.
Sherman: Madeline Maryon (Miss), Ilford, Essex.
Silsby: Peter, Harpenden, Herts.
Silvester: Reginald John, Stafford.
Simmons: Godfrey Ivan, Bristol.
Simpson: Malcolm James, Luton, Beds.
Sims: Ronald Hubert.
Skipper: Edward John Goodwin, Norwich.
Slaney: Oliver Edward Frank [*L*].
Small: William Hugh MacKenzie, Dip.Arch. (Dundee), Edinburgh.
Smith: Denis William, Bristol.
Smith: Douglas Jennings, Birmingham.
Smith: Frederick Addison, Southampton.
Smith: George Clayton, Leeds.
Smith: Herbert Stanley.
Smith: John Batson [*L*], Great Missenden.
Smith: Keith Pegden, Slough, Bucks.
Smith: Leonard Lloyd, Newark, Notts.
Smith: Michael Walter Morwen B.A. (Arch.) (Lond.).
Smith: Stanley Herbert.
Smith: Stanley Owen, Dip.Arch. (Birmingham), Burton-on-Trent, Staffs.
Sommerville: Thomas Hamilton, Edinburgh.
Sorrell: Jack, Chelmsford, Essex.
Sperring: Kenneth George, Birmingham.
Sprague: William George, Ewell, Surrey.
Stanwell: Arthur Gerald, Beckenham.
Stapleton: Jesse Alfred [*L*].
Sterland: William Donnelly, Watnall, Notts.
Stevens: Eldred John, Malvern, Worcs.
Stevenson: Eric Spencer, Dip.Arch. (L'pool), Stoke-on-Trent.
Surman: John Leslie Silvester, Birmingham.
Sutton: William Hamel, Stockport.
Swain: Henry Thornhill.
Tandy: Clifford Ronald Vivien, Epsom Downs.
Tandy: David Frederick, Worcester Park, Surrey.
Tate: Alan, Newcastle-on-Tyne.
Taylor: George Calvin, Mansfield, Notts.
Taylor: Henry (Junr.), Darlington, Co. Durham.
Taylor: Robert, Newcastle-on-Tyne.
Taylor: William Cook, B.A., Blackpool.
Thomas: George Albert, Bolton, Lancs.
Thompson: Arthur Desmond Hunter, Dip.Arch. (Edinburgh), Belfast.
Thompson: John, Blackpool.
Thomson: Ronald George.
Thorne: Donald Harry, Sheffield.
Thurstan: James Reginald Holdcroft, B.A. (Arch.).
Tindall: Kenneth, Kingston-upon-Hull.
Toogood: Geoffrey Roger, Croydon.
Topley: William Eric, Dip.Arch. (Dist.) (L'pool), Liverpool.
Townell: William, Newcastle-upon-Tyne.
Trew: John Kenneth Ormonde, B.Arch. (Hons.) (L'pool), Hindhead.
Trinder: Victor William, Leatherhead.
Trofimov: Aubrey Alwyn Edgar, M.C., Croix de Guerre, Manchester.
Tucker: Rodney Clive.
Tuckett: Daniel Haines, Chesham, Bucks.
Unger: Herbert, Dublin.
Unwin: George Raymond, Coventry.
Urquhart: Kenneth Hector.
Vanston: James Frederick, Norwich.
Verrall: Peter Wyndham.
Vickers: George Moston.
Voelcker: Ann (Mrs.).
Waddington: Margaret (Miss), B.A. (Hons. Arch.) (M'chester), Spalding.
Wade: John Bryan, B.Arch. (L'pool), Southport.
Walker: Alan Henry.
Walker: Charles Matthew, Redcar, Yorks.
Wallis: George John, Doncaster.
Walton: Jeffrey, Dip.Arch. (Dist.) (Leeds), Wakefield.
Ward: Donald Leslie, Leigh-on-Sea.
Warner-Riley: Walter Stanley, Exeter.
Weeks: Alexander James.
Wells: Edward Martin Glossop.
Wells: Geoffrey Banham, Witney.
Wellwood: William Ritchie, Dip.Arch. (Edinburgh), Edinburgh.
Westaway: Ronald John, Croydon.
Whear: William George, Ilford.
White: Peter Edward, Leeds.
White: Raymond Charles, Birmingham.
Whitham: June Denise (Miss).
Whittaker: Telford John, Sittingbourne.
Wilkinson: Ellis, Preston.
Williams: Frank Clifford, Plymouth.
Williams: Laurence Arthur, Cardiff.
Williams: Michael Alan Shenton, B.A. (Hons. Arch.), Sheffield.
Williams: Peter Leslie Aitken, Glasgow.
Wilson: Charles Herbert, Barrow-in-Furness.
Wilson: Colin Alexander St. John, B.A. (Arch.) (Cambridge), Chelmsford.
Winter: Odette Madeline Denise (Miss), B.A. (Arch.) (Lond.).
Winteringham: Claude Richard Graham, Birmingham.
Woffenden: Harry Greenwood, B.A. (Arch) (London).
Wolstenholme: Michael Ashmore.
Wood-Jones: Raymond Bernard, B.Arch.(Hons) (L'pool), Wallasey, Cheshire.
Worth: Kenneth Malcolm, Dip.Arch. (Leeds), Wakefield, Yorks.
Wright: Cecil Frank Dip.Arch. (L'pool), Liverpool.
Wright: Jennifer Mary (Mrs.).
Wright: Norman, Castleford, Yorks.
Wright: Richard Gordon, Dip.Arch. (Sheffield), Chesterfield.
Wyatt: James Spencer.

AS LICENTIATES (5)

Barton: Vincent Albert Mead, Bridgwater, Somerset.
Brown: Robert Maxwell, Middlesbrough.
Burrows: Thomas Mortimer.
Rundle: Kenneth Edwin, Truro.
Watson: David Graham, Glasgow.

ELECTION: 3 JANUARY 1950

An election of candidates for membership will take place on 3 January 1950. The names and addresses of the candidates with the names of their proposers, found by the Council to be eligible and qualified in accordance with the Charter and Bye-laws, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Monday 2 January 1950.

The names following the applicant's address are those of his proposers.

AS HONORARY ASSOCIATES (4)

Bodkin: Thomas, M.A., Barrister-at-law, D.Lit. (N.U.I.), Lit.D. (T.C.D.), M.R.I.A., Hon. R.H.A., Professor of Fine Arts, The University of Birmingham and Director of the Barber Institute, Honorary Professor of the History of Art, Trinity College, Dublin, Professor of the History of Art, The Royal Hibernian Academy. The Barber Institute, The University, Birmingham 15. Proposed by the Council.

Kendrick: Thomas Downing, M.A., Hon.D.Litt. F.B.A., F.S.A., 11 Essex Villas, W.8. Proposed by the Council.

Lea: Frederick Measham, O.B.E., D.Sc., F.R.I.C., Evergreens, Potten End, Berkhamsted, Herts. Proposed by the Council.

Leslie: Ian Murray, J.P., Flat 1, 3 Netherhall Gardens, Hampstead, N.W.3. Proposed by the Council.

AS HONORARY CORRESPONDING MEMBERS (2)

Dedoyard: Georges, 2a Rue du Pot d'Or, Liege, Belgium. Proposed by the Council.

Dumont: Alexis C. M. Ancien President de la S. C.A.B., Membre de la Commission Royale des Monuments et des Sites., Membre corr. de l'Academie Royale de Belgique, Officier de l'Ordre de Leopold, 46 Avenue Emile Duray, Brussels. Proposed by the Council.

AS FELLOWS (6)

Eden: William Arthur, M.A. (L'pool) [*A* 1929], Leeds School of Architecture, 43a Woodhouse Lane, Leeds, 2; Eastbrook House, Rawdon, Leeds. Prof. L. B. Budden, N. R. Paxton, Victor Bain.

Gifford: Robert Claude, M.B.E. [*A* 1931], 323, High Street, West Bromwich; Windrush, Pages Lane, Great Barr, Birmingham 22a. Herbert Jackson, Reginald Edmonds, F. R. S. Yorke.

Herrmann: Fritz Heinrich Joseph [*A* 1947], 24 Chancery Lane, W.C.2; 4 North Square, N.W.11. Hubert Lidbetter, Prof. William Holford, L. S. Stanley.

Marston: Winston Ewart [*A* 1933], University of Cambridge, Department of Estate Management, Kenmare House, 74 Trumpington Street, Cambridge; 15 Chesterfield Road, Cambridge. J. Macgregor, D. H. Loukes, Peter Bicknell.

Osburn: William John Arthur [*A* 1931], 31/33 High Holborn, W.C.1; Southdown, Lower Green Road, Esher, Surrey. S. R. Pierce, Howard Robertson, R. E. Enthoven.

Tubbs: Grahame Burnell [*A* 1918], 31/33 High Holborn, W.C.1; 21 Cranmer Court, Sloane Avenue, S.W.3. S. R. Pierce, Howard Robertson, R. E. Enthoven.

AS ASSOCIATES (81)

The name of a school, or schools, after a candidate's name indicates the passing of a recognized course.

Ainsworth: Edward Nuttall [Final], 23 Foster Street, Oldham. Francis Jones, W. C. Young, H. T. Seward.

Allan: George Lyon (Dundee Coll. of Art: Sch. of Arch.), 10 South Street, St. Andrews. John Needham, J. D. Mills, L. W. Hutson.

Arthur: Mary Kathleen (Miss), Dip.Arch. (Leicester) (Leicester Coll. of Art and Tech. Sch. of Arch.), 'Cornerways', 271 Knighton Church Road, Leicester. F. Chippindale, G. A. Cope, S. Penn Smith.

Atkinson: James Clifford, Dip.Arch. (Dunelm) (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), 'Evelyn House', Sunniside Lane, Cleadon Village, nr. Sunderland. Prof. W. B. Edwards, T. A. Page, Dr. Ronald Bradbury.

Bailey: John Gordon, Dip.Arch. (Leeds) (Leeds Sch. of Arch.), 23 Harthill Parade, Gildersome, nr. Leeds. Geo. Crossley, and applying for nomination by the Council under Bye-law 3 (*d*).

Baxter: Gerald Malcolm (Leeds Sch. of Arch.), 15 Balmoral Avenue, Beaumont Park, Huddersfield. Norman Culley, G. B. Howcroft, G. H. Foggitt.

Beer: Arthur Thomas, B.Arch. (Wales) (Welsh Sch. of Arch.: The Tech. Coll., Cardiff). 272 Christchurch Road, Newport, Mon. Johnson Blackett, C. F. Bates, Lewis John.

Beresford: Dennis (Nottingham Sch. of Arch.), 21 Station Road, Langley Mill, Notts. T. C. Howitt, A. E. Eberlin, C. F. W. Haseldine.

Bishop: Rosa (Mrs.) [Final], 118 Belgrave Road, Victoria, S.W.1. E. M. Rice, C. G. Stillman, G. R. Hutton.

Brown: Basil George (Leicester Coll. of Art and Tech. Sch. of Arch.), 'Halfacre', Lowick, Kettering, Northants. F. Chippindale, T. W. Haird, S. Penn Smith.

Browne: John Lindsay, B.Arch. (Dunelm) (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), 22 Highbury, Newcastle-upon-Tyne, 2. Prof. W. B. Edwards, C. A. Harding, J. H. Napper.

Butler: Anne Judith (Miss) (Leeds Sch. of Arch.), c/o Mrs. Oughton, 23 Wallis Avenue, Hykeham Road, Lincoln. G. H. Foggitt, Victor Bain, C. W. C. Needham.

Buzas: Stefan (Arch. Assoc. (London): Sch. of Arch.), 54 Abingdon Villas, W.8. R. F. Jordan, A. R. F. Anderson, A. W. Kenyon.

Calow: Dennis Arthur, Dip.Arch. (Leicester) (Leicester Coll. of Art and Tech. Sch. of Arch.), 21 Dennor Park, Hengrove, Bristol, 4. F. Chippindale, G. A. Cope, S. Penn Smith.

Campbell: John Barton (Victoria Univ. (Manchester), Sch. of Arch.), 120 Lynwood Road, Blackburn, Lancs. Prof. R. A. Cordingley, J. P. Nunn, F. L. Halliday.

Candlish: Laurie Campbell (Leicester Coll. of Art and Tech. Sch. of Arch.), Brantinghill Hotel, Grosby, nr. Leicester. M. W. Pike, F. Chippindale, W. J. Prince.

Clark: Eric [Final], 111 Great Stone Road, Manchester, 16. Francis Jones, W. C. Young, H. T. Seward.

Clayton: Donald Francis (Leicester Coll. of Art and Tech. Sch. of Arch.), 60 Chain Lane, Littleover, Derby. F. Chippindale, G. A. Cope, S. Penn Smith.

Collins: Stanley Francis [Special Final], Milburn Lodge, Boars Hill, Oxford. E. M. Rice, E. A. L. Martyn, R. F. Dodd.

Corby: Eric Roy [Final], 70 Sunnyfield, Mill Hill, N.W.7. E. B. Glanfield, T. M. Wilson, D. L. Solomon.

Cowbourne: Hilda Margaret (Miss), Dip.Arch. (Leeds) (Leeds Sch. of Arch.), 'Hawksview', Westfield Lane, Idle, Bradford, Yorks. B. Chippindale, N. R. Paxton, G. H. Foggitt.

Crick: Norman Victor Albert (Northern Poly. (London): Dept. of Arch.), 108 Basingstoke Road, Reading. T. E. Scott, Howard Robertson, W. S. Grice.

Crosby: George Richard (Univ. of Sheffield: Dept. of Arch.), Barley Mow, Wingerworth, Chesterfield. Prof. Stephen Welsh, H. B. Leighton, H. B. S. Gibbs.

Curtis: Edward James William (Nottingham Sch. of Arch.), 93 Averil Road, Scraptoft, Leicester. J. W. M. Dudding, F. Chippindale, Kenneth Palmer.

Darge: George Leslie (Edinburgh Coll. of Art: Sch. of Arch.), 153 Stamfordham Road, Newcastle-on-Tyne. A. H. Mottram, J. R. McKay, Leslie Grahame-Thomson.

Davenport: Peter Brian (Victoria Univ. (Manchester), Sch. of Arch.), 42 Ford Bank Road, Didsbury, Manchester, 20. Prof. R. A. Cordingley, J. P. Nunn, L. C. Howitt.

de Souza: Arnold Jeremy [Final], 16 Ladbroke Gardens, W.11. Sir Thomas Bennett, M. L. Winslade, L. J. Bathurst.

Dewar-Mills: Donald Campbell (The Poly., Regent Street, London: Sch. of Arch.), 13 Bassett Road, W.10. J. S. Walkden, Herbert Kenchington, Peter Moro.

Diamond: John Bedford, B.Arch. (Hons.) (L'pool) (Liverpool Sch. of Arch.: Univ. of Liverpool), 45 St. Barnabas' Road, Cambridge. Prof. L. B. Budden, D. Brooke, B. A. Miller.

Eastwood: James Donald (Leeds Sch. of Arch.), 9 Hillside Road, Pannall, Harrogate. F. L. Charlton, G. H. Foggitt, N. R. Paxton.

Eatwell: Peter Franklin (Northern Poly. (London): Dept. of Arch.), 96 Cromwell Avenue, Highgate, N.6. T. E. Scott, Raglan Squire, Frederick Gibberd.

Farrer: Walter Ronald, B.Arch. (Hons.) (Dunelm) (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), Whittonstall, Ebchester, Co. Durham. Prof. W. B. Edwards, J. H. Napper, D. L. Couves.

Fielding: Allen Henry (Bartlett Sch. of Arch.: Univ. of London), 19 Queens Walk, Ealing, W.5. R. T. Beck, Prof. H. O. Corfiato, D. du R. Aberdeen.

Gelibter: Adam Adolf (Bartlett Sch. of Arch.: Univ. of London), 61 Highstone Mansions, Camden Road, N.W.1. Prof. H. O. Corfiato, S. L. Thomson, R. C. White-Cooper.

Gibbs: Frank Peter Russell (Arch. Assoc. (London): Sch. of Arch.), Hill Crest, Elsworth, Cambridge. J. MacGregor, R. F. Jordan, A. R. F. Anderson.

Godsmark: Norman Harry (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), 35 The Riding, Kenton, Newcastle-on-Tyne, 3. Prof. W. B. Edwards, R. K. Pullen, Kenneth Dalgliesh.

Hall: George Harold Emmett, Dip.Arch. (Dundee) (Dundee Coll. of Art: Sch. of Arch.), c/o Messrs. Cullen, Lochhead and Brown, 119 Cadzow Street, Hamilton, Lanarkshire. John Needham, L. W. Hutson, G. C. Young.

Halliday: Anthony Mark Douglas (Liverpool Sch. of Arch.: Univ. of Liverpool), Architect's Dept., Hemel Hempstead Development Corpn., Westbrook Hay, Hemel Hempstead, Herts. Prof. L. B. Budden, F. X. Velarde, B. A. Miller.

Harker: Leslie Wilson, D.F.C. (Leeds Sch. of Arch.), 4 Lyndhurst Road, Scholes, nr. Leeds. E. E. Morgan, W. F. Dawson, R. S. Shapley.

Harmer: Donald Leonard (Leicester Coll. of Art and Tech. Sch. of Arch.), 20 Evington Parks Road, Leicester. F. Chippindale, G. A. Cope, S. Penn Smith.

Hind: Arthur William Henry, Dip.Arch. (Leicester) (Leicester Coll. of Art and Tech. Sch. of Arch.), 31 Grosvenor Crescent, Leicester. F. Chippindale, Mrs. R. A. Gerrard, Hugh Bankart.

Holman: Ian Hamilton (Liverpool Sch. of Arch.: Univ. of Liverpool), 14 Headswell Crescent, Redhill Heights, Bournemouth. Prof. L. B. Budden, D. Brooke, B. A. Miller.

Holmes: Francis Charles (The Poly., Regent Street, London: Sch. of Arch.), 25 Wiseton Road, S.W.17. J. S. Walkden, David Jenkin, George Coles.

Hume: John David (Northern Poly. (London) Dept. of Arch.), 24 Albany Park Road, Kingston-upon-Thames, Surrey. T. E. Scott, Frederick Barber, J. W. Spink.

Iredale: Ralph Norman David, Dip.Arch. (L'pool) (Liverpool Sch. of Arch.: Univ. of Liverpool). 'Annville', Burrelton, Perthshire. Prof. L. B. Budden, D. Brooke, B. A. Miller.

Johnson: Peter Eatough (Victoria Univ. (Manchester): Sch. of Arch.), 32 Fir Grove Hill, Farnham. Prof. R. A. Cordingley, A. J. Hope, A. J. Stedman.

Jones: Eric Scargill [Final], Howstrake, Skidby, Ings Lane, Dunswell, Hull. G. N. Hill, G. G. Speight, and applying for nomination by the Council under Bye-law 3 (*d*).

Kemp: Ronald George [Special Final], 48 Bowes Road, N.13. C. W. Box, Harold Greenwood, Robert Lutyens.

Kirkman: Alan Clifford, Dip.Arch. (Leics) (Leicester Coll. of Art and Tech. Sch. of Arch.), 169 Stamfordham Road, Fenham, Newcastle-upon-Tyne, 5. F. Chippindale, F. W. Harvey, S. Penn Smith.

Lee: Alan Oliver (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), 71 Ridley Avenue, Blyth, Northumberland. Prof. W. B. Edwards, J. H. Napper, Richard Mellor.

Leven: James Findlay (Passed a qualifying Exam. approved by the R.A.I.A.), c/o J. Leven, Esq., 57 Devon Avenue, Twickenham, Middlesex. F. G. Costello, E. P. Trewern, and applying for nomination by the Council under Bye-law 3 (*d*).

Lewis: John David Jacob (Welsh Sch. of Arch.: The Tech. Coll., Cardiff), Fair View, Llandyssul, Cardiganshire. Lewis John, T. A. Lloyd, C. F. Jones.

Lyell: Michael George Rudinge (Arch. Assoc. (London): Sch. of Arch.), 51 Apsley House, St. John's Wood, N.W.8. R. F. Jordan, and the President and Hon. Secretary of the A.A. under Bye-law 3 (*b*).

MacRitchie: Alistair Crawford Cameron (Glasgow Sch. of Arch.), c/o Smith, 90 Randolph

Road, Glasgow, W.1. Prof. W. J. Smith, A. G. Jury, W. J. B. Wright.

Mair: John Archibald Duguid (Glasgow Sch. of Arch.), 34 Norse Road, Scotstounhill, Glasgow, W.4. Colin Sinclair, Prof. W. J. Smith, W. J. B. Wright.

Markus: Thomas Andrew, B.A. (Hons. Arch.) (Man'cr.) (Victoria Univ. (Manchester): Sch. of Arch.), 207 Broadbottom Road, Mottram, Manchester. Prof. R. A. Cordingley, Peter Cummings, J. P. Nunn.

Mead-Kidd: Peter Byron, Dip.Arch. (Nott'm) (Nottingham Sch. of Arch.), 'The Cedar', 144 Western Boulevard, Nottingham. Percy Bartlett, T. C. Howitt, A. E. Eberlin.

Milton-Hine: Raymond Richard, Dip.Arch. (Leics.) (Leicester Coll. of Art and Tech. Sch. of Arch.). 'Sunnymead', Alcombe, Minehead. Eric Cole, F. Chippindale, S. Penn Smith.

Morgan: John Robert (Northern Poly. (London): Dept. of Arch.), 33 Hereward Gardens, Palmers Green, N.13. T. E. Scott, J. T. W. Peat, H. E. Askey.

Pearce: Margaret Ricardo (Mrs.) (Arch. Assoc. (London): Sch. of Arch.), 93, Cheyne Walk, S.W.10. R. F. Jordan, and the President and Hon. Secretary of the A.A. under Bye-law 3 (*b*).

Pye: Ronald Leonard (Bartlett Sch. of Arch.: Univ. of London), 17 Brandville Gardens, Barkingside, Ilford. Prof. H. O. Corfiato, L. S. Stanley, D. du R. Aberdeen.

Roberts: Basil Miles (Liverpool Sch. of Arch.: Univ. of Liverpool), 18 Radley Road, Wallasey. Prof. L. B. Budden, B. A. Miller, D. Brooke.

Robinson: Dale (Liverpool Sch. of Arch.: Univ. of Liverpool), 43 High Lane East, West Hallam, nr. Derby. Prof. L. B. Budden, D. Brooke, B. A. Miller.

Seaman: Hugh Wynn (Welsh Sch. of Arch.: The Tech. Coll., Cardiff), 55 Richmond Road, Cardiff. Lewis John, T. A. Lloyd, C. F. Jones.

Serby: Anthony Sinclair (The Poly., Regent Street, London: Sch. of Arch.), 33 Ilmington Road, Northwick Park, Harrow, Middlesex. J. S. Walkden, David Jenkin, George Coles.

Shand: Audrey Elizabeth (Miss) (Liverpool Sch. of Arch.: Univ. of Liverpool), 101 Canterbury Road, Herne Bay, Kent. Prof. L. B. Budden, B. A. Miller, D. Brooke.

Spence: Julie Margaret (Mrs.) (Bartlett Sch. of Arch.: Univ. of London), 24 Gunter Grove, Chelsea, S.W.10. Prof. H. O. Corfiato, L. S. Stanley, D. du R. Aberdeen.

Stephenson: John (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), 50 Cavendish Place, Jesmond, Newcastle-upon-Tyne, 2. Prof. W. B. Edwards, J. H. Napper, C. A. Harding.

Subiotto: George John (The Poly., Regent Street, London: Sch. of Arch.), 48 Fladgate Road, Leytonstone, E.11. J. S. Walkden, Peter Moro, Dr. J. L. Martin.

Summerbell: Marjorie (Miss), B.Arch. (Hons.) (Dunelm) (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.), 3 Parkside, East Herrington, Sunderland. Prof. W. B. Edwards, D. L. Couves, J. H. Napper.

Sunderland: Geoffrey (Leeds Sch. of Arch.), 11 Thorn Drive, Haworth Road, Bradford, Yorks. Hubert Bennett, Benjamin Chippindale, W. Illingworth.

Thompson: John Christopher, B.E., B.Arch. (Dublin), A.M.I.C.E.I. (Univ. Coll., Dublin, Ireland: Sch. of Arch.), 45 O'Connell Street, Limerick. Prof. J. V. Downes, S. S. Kelly, J. J. Robinson.

Trasler: Shirley Barbara (Miss) (Liverpool Sch. of Arch.: Univ. of Liverpool), Parkfields Drive, Derby. Prof. L. B. Budden, B. A. Miller, F. X. Velarde.

Ward-Willis: Michael John, Dip.Arch. (Leics.) (Leicester Coll. of Art and Tech. Sch. of Arch.), 11 Leicester Road, Glenfields, Leicestershire. F. Chippindale, G. A. Cope, S. Penn Smith.

Warner: James William (Liverpool Sch. of Arch.: Univ. of Liverpool), 13a Seafield Drive, Wallasey, Cheshire. Prof. L. B. Budden, D. Brooke, B. A. Miller.

Way: John Norman (Welsh Sch. of Arch.: The Tech. Coll., Cardiff), 9 Lime Grove Avenue, Carmarthen. Lewis John, T. A. Lloyd, C. F. Jones.

Wheeler: John Edward (Leicester Coll. of Art and Tech. Sch. of Arch.), 26 Dulverton Road, Leicester. William Keay, T. W. Haird, F. Chippindale.

Wilford: Edmund (Leicester Coll. of Art and Tech. Sch. of Arch.), 3, Taunton Road, Leicester. F. Chippindale, G. A. Cope, S. Penn Smith.

Wilson: Geoffrey, Dip.Arch. (Leeds) (Leeds Sch. of Arch.), 4 Wilmur Mount, Burnley Road, Luddendenfoot, Yorks. C. Sunderland, J. F. Walsh, G. H. Foggitt.

Wood: Leslie George (King's Coll. (Univ. of Durham), Newcastle-upon-Tyne, Sch. of Arch.) 139 Rothbury Terrace, Heaton, Newcastle-upon-Tyne, 6. Prof. W. B. Edwards, J. H. Napper, T. L. Browne.

Yates: John Burns (Dundee Coll. of Art.: Sch. of Arch.), 22 Kinloss Crescent, Cupar, Fife. John Needham, Leslie Grahame-Thomson, A. D. Haxton.

AS LICENTIATES (8)

Beaumont: John: c/o Messrs. Brian L. Sutcliffe and Partners, 104 Watergate Street, Chester. C. E. Howitt, B. L. Sutcliffe, H. E. Davies.

Billam: John, 522 Falmer Road, Woodingdean, Brighton, 7. Applying for nomination by the Council under Bye-law 3 (*d*).

Cook: Maurice Henry Arthur, City Architect's Dept. (Education Section), Seymour Road, Mannamead, Plymouth; 2f Osborne Villas, Stoke, Plymouth. E. A. W. Ixer, E. U. Channon, J. L. Fouracre.

Marston: Frederick William, c/o Messrs. Lewis and Hickey, 103 Regent Street, W.1; 14 Avenue Elmers, Surbiton, Surrey. P. Hickey, H. L. Bloomfield, Norman Jones.

Pople: Cecil Davey, c/o Alec. F. French, Esq., Westminster Bank Chambers, 22 Bedford Street, Plymouth; 36 Burnham Park Road, Peverell, Plymouth. G. W. Jackson, A. F. French, B. I. Day.

Stilwell: Frank Stuart, c/o J. Leighton Fouracre, Esq., 7 Alexandra Road, Plymouth; Glen Holt House, Glen Holt, nr. Crownhill, Plymouth. J. L. Fouracre, E. U. Channon, H. B. Challen.

Wash: William Todd, Asst. Area Engineer, Ministry of Works, Station Approach, Kidbrooke Park Road, S.E.3; 73 Lord Street, Hoddesdon, Herts. T. S. Darbyshire, and applying for nomination by the Council under Bye-law 3 (*d*).

Wincer: Arthur Charles Boys, c/o South West Metropolitan Regional Hospital Board, 11a Portland Place, W.1; 71 Leatherhead Road, Chessington, Surrey. C. M. Coombs, N. D. Quick, L. C. Lomas.

ELECTION: 4 APRIL 1950

An election of candidates for membership will take place on 4 April 1950. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday 18 March 1950.

AS FELLOW (1)

Winbush: Harry Stephen [*A* 1929], 20 Queen Street, Melbourne, Australia; 50 Fletcher Street, Essendon, Australia. B. B. Lewis, F. E. Towndrow, L. Laybourne-Smith.

AS ASSOCIATES (13)

Christie: Ewen Maxwell (Passed a qualifying Exam. approved by the N.Z.I.A.), 361 The Terrace, Wellington, New Zealand. H. L. Massey, and the President and Hon. Sec. of the N.Z.I.A. under Bye-law 3 (*a*).

Feilman: Margaret Anne (Miss), B.A. (Passed a qualifying Exam. approved by the R.A.I.A.), 24 Mountjoy Road, Nedlands, West Australia. F. G. Costello, A. J. Hobbs, F. G. B. Hawkins.

Gibson: Richard John (Passed a qualifying Exam. approved by the R.A.I.A.), 58 Garden Street, Geelong, Victoria, Australia. C. E. Serpell, J. F. D. Scarborough, R. K. Stevenson.

Harrison: Raymond Owen, Dip.Arch. (Melbourne) (Passed a qualifying Exam. approved by the R.A.I.A.), 3 Curral Road, Elsternwick, S.4, Victoria, Australia. L. M. Perrott, Leighton Irwin, J. F. D. Scarborough.

Hutchinson: Frances Inglis (Miss) (Passed a qualifying Exam. approved by the R.A.I.A.), Flat 1, 4 Yarra Street, South Yarra, Melbourne, Australia. J. F. D. Scarborough, Leighton Irwin, A. S. Hall.

Morris: Stanley Albert (Passed a qualifying Exam. approved by the R.A.I.A.), c/o Messrs. Stephenson and Turner, 16 Barrack Street, Sydney, N.S.W., Australia. A. G. Stephenson, D. K. Turner, G. L. Moline.

Morris: Terence Parker, B.Arch. (Capetown) (Passed a qualifying Exam. approved by the I.S.A.A.), c/o R. Spencer Parker, Esq. [*A*], P.O. Box 1608, Salisbury, S. Rhodesia. D. R. Harper, C. P. Walgate, J. R. Anderson.

Muston: George Ronald Colin (Passed a qualifying Exam. approved by the N.Z.I.A.), 39 Johnston Street, Wellington, New Zealand. C. R. Ford, W. G. Young, H. L. Massey.

Sedgfield: Kingston Knight (Passed a qualifying Exam. approved by the R.A.I.A.), 15 Narooma Road, Northbridge, N.S.W., Australia. D. K. Turner, Prof. Leslie Wilkinson, G. L. Moline.

Shapiro: Benjamin Woulf, B.Arch. (Rand) (Passed a qualifying Exam. approved by the I.S.A.A.), 13 Britannia Street, Port Elizabeth, C.P., South Africa. Applying for nomination by the Council under Bye-law 3 (*d*).

Shimmin: John Philip (Passed a qualifying Exam. approved by the R.A.I.A.), 21 Lalbert Crescent, Armadale S.1, Melbourne, Victoria, Australia. P. H. Meldrum, J. F. D. Scarborough, S. T. Parkes.

Vinton: Leonard George [Final], P. O. Box 952, Bulawayo, Southern Rhodesia. I. D. MacGillivray, C. A. Knight, F. A. Jaffray.

Watermeyer: Errol Hobson, B.Arch. (Dist) (Capetown) (Passed a qualifying Exam. approved by the I.S.A.A.), 35 Wares Road, Mill Park, Port Elizabeth, South Africa. Prof. L. W. T. White, O. Pryce Lewis, D. R. Harper.

Members' Column

This column is reserved for notices of changes of address, partnership and partnerships vacant, or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

CORRECTIONS TO R.I.B.A. KALENDAR 1949-50

In the list of Students the surname of **Mr. Christopher Charles Michael Giffin** is incorrectly printed as Griffin (page 407).

The following Student's name was omitted in error and should have appeared on page 441: **1932 Stallard: Eric George,** Ministry of Works, Abell House, John Islip Street, London, S.W.1.

On page 568 under the list of R.I.B.A. Prizes for Public and Secondary Schools, the name of **Mr. W. B. Worral,** of University College School, Hampstead, was omitted in error. He was awarded a prize for his sketches in the 1948-49 award.

APPOINTMENTS

Mr. H. Baines [*L*], Chief Assistant Architect, Mitcham Borough Council, has been appointed Deputy Borough Architect to Penzance (Cornwall), and his future address for correspondence etc. will be Municipal Buildings, Penzance.

Mr. D. W. Dickenson [*A*] has resigned from the position of Principal Assistant Architect for Education in the Buildings Department of the Kent County Council on being appointed Architect to the Education Committee of the North Riding of Yorkshire. He takes up duties in February, 1950.

Mr. Zahir-ud-Deen Khwaja, A.M.T.P.I. [*A*], has been appointed Assistant Government Architect in charge of the Chittagong Planning Office, and his address will be Circuit House, Chittagong, East Pakistan.

Mustapha Fahmy Pasha [*Hon. Corres. Member, Egypt*] has, by Royal Decree of H.M. King Farouk I of Egypt, been appointed Minister of Public Works of the Egyptian Government. This took effect on 3 November 1949.

Mr. R. T. Walters, A.M.I.Struct.E. [*A*] has resigned his position with the Timber Development Association to take up the appointment of Assistant Architect, Eastern Region, British Railways, at King's Cross Station, London.

PRACTICES AND PARTNERSHIPS

Mr. Tom Armstrong [*A*] has commenced practice at 13 Kirk Wynd, Kirkcaldy, Fife, where he will be pleased to receive trade catalogues etc.

Mr. Maxwell Ayrton [*F*], of 9 Church Row, Hampstead, London, N.W.3, will from 1 January 1950 take into partnership **Mr. J. A. Lynch and Mr. Courtenay Theobald** [*F*]. The partnership will be carried on under the name of **Maxwell Ayrton and Partners.**

Mr. John J. Bevan [*A*] is now practising at Chandos House, Buckingham Gate, Westminster, London, S.W.1 (ABBey 5792), where he will be pleased to receive trade catalogues etc. He is also continuing to practise at 19-23 Wimbledon Bridge, Wimbledon, London, S.W.19 (WIMbledon 2073).

Mr. John S. Brown [*A*], having resigned from Messrs. Stephenson and Turner, of Little Collins Street, Melbourne, has entered into partnership with **Mr. John A. Simpson,** of 440 Burke Road, South Camberwell, Melbourne. They are practising as **Simpson and Brown** at that address.

Mr. F. Greenwood [*A*] has resigned his partnership with **Sir John Brown, A. E. Henson and Partners,** and is now practising at 25 Liverpool Road, Kingston-on-Thames (Kingston 0652).

Mr. H. N. W. Grosvenor [*A*] has resigned from the partnership of **Sir John Brown, A. E. Henson and Partners,** 117 Sloane Street, London, S.W.1, with effect from 30 November 1949.

Mr. Albert McCombie [*A*] has opened an office at 102 High Street, Inverurie, Aberdeenshire, and will be pleased to receive trade catalogues, samples etc.

Arthur E. T. Mort and Partners (Mr. Alfred H. Howard [*L*]) opened a branch office at 33 High Street, Andover, Hants, on 12 December, and will be pleased to receive trade catalogues etc.

Mr. Leonard J. Multon [*F*] in addition to his office at 147 Corporation Street, Birmingham, has commenced practice at 13a College Hill, Shrewsbury, and will be pleased to receive trade catalogues, samples etc. at the new office.

Mr. S. J. Oldham [*L*] has taken into partnership **Mr. L. A. Hyde** [*A*]. The practice will continue under the style of **S. J. Oldham and Partners,** 4 Queen Victoria Road, Coventry (Coventry 2180).

Mr. F. Murray Polson [*A*] has resigned his appointment as Senior Architect, Ministry of Works, and has commenced practice at 751 Granville Street, Vancouver, B.C., Canada.

The partnership between **Mr. George Whitby,** M.B.E. [*A*], and **Mr. S. C. Kerr Bate** [*L*], under the name of **Walters, Whitby and Kerr Bate,** will be dissolved on 25 December. After that date **Mr. Whitby** will continue his practice from 42 Manchester Street, London, W.1, and **Mr. Kerr Bate** will continue in practice under the name **Walters and Kerr Bate** from 10 Great James Street, London, W.C.1 (HOLborn 9850).

As from 2 November 1949 **Mr. W. T. Williams** [*A*] has by mutual consent relinquished his partnership in the firm of **W. T. Williams and Partners,** of 35 Holland Park, London, W.11. The remaining partners, **Mr. G. B. A. Williams** [*A*] and **Mr. J. S. Williams,** A.M.I.C.E., are continuing the practice at the same address.

CHANGES OF ADDRESS

Mr. F. H. Brazier [*A*] and **Mr. G. Hartington** [*L*] have removed to 21 Market Street, Altrincham.

Mr. Charles McVeagh Crichton [*A*] has moved to a new permanent address at 42 Acacia Road, London, N.W.8 (PRImrose 0159).

Mr. R. Crookes [*A*] has removed from 'Tatio', Venn Grove, Plymouth, to 'The Studio', 79a Linden Gardens, London, W.2 (BAYswater 8462).

Lionel H. Fewster and Partners, Architects and Surveyors, have removed their branch office from 6a South Place, Worthing, to 6 Liverpool Terrace, Worthing. The telephone number, Worthing 6826, remains the same.

The new address of **Mr. T. D. Gedrych** [*A*] is P.O. Box 154, Moshi, T.T. East Africa.

Mr. Lewis J. Gomme [*L*], President of the Essex, Cambridge and Hertfordshire Society of Architects, and Chairman of the Cambridge Chapter of Architects, has removed from 9 Cranmer Road, Cambridge, to Wingate Way, Trumpington Road, Cambridge.

Mr. Norman Green [*F*] has moved his office from 8 Aldgate High Street, London, E.C.3, to 12 Adeline Place, Bedford Square, London, W.C.1 (LANgham 8577), and will be pleased to receive trade catalogues etc.

The telephone number of **Mr. H. S. Jaretzki** [*L*], who practises at 20 Dorset Square, London, N.W.1, has been changed to AMBassador 2833/6.

Mr. Thomas J. Piercy [*A*] has removed from 79 Grange Road, Birmingham, 24, to 43 Beachburn Way, Handsworth Wood, Birmingham, 20.

Bronek Katz and **R. Vaughan** [*A*] have removed from 35 Welbeck Street, to 12 Norfolk Crescent, Hyde Park, London, W.2 (AMBassador 3740).

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate (37) with experience in first-class private and public offices requires partnership or position leading thereto in London or provinces. Box 93, c/o Secretary, R.I.B.A.

Member with very good connections in Norfolk and with capital available seeks partnership; Norwich area preferred. Box 88, c/o Secretary, R.I.B.A.

Member (40), thoroughly experienced in general practice and with connections in Devon and Cornwall, seeks partnership in busy firm in either of those counties. Moderate capital available. Box 89, c/o Secretary, R.I.B.A.

Senior partnership in Surrey for sale. Fellow retiring. Box 90, c/o Secretary, R.I.B.A.

WANTED AND FOR SALE

Wanted. *Italian Gardens of the Renaissance* (Shepherd and Jellicoe), *Gardens and Design* (Shepherd and Jellicoe), *Garden Decoration and Ornament* (G. A. Jellicoe), *Spanish Gardens* (C. M. Villiers-Stewart), *A History of Garden Art* (M. L. Gothian). Box 94, c/o Secretary, R.I.B.A.

For Sale. A 'Thornton' 4-screw dumpy level in mahogany case, together with tripod, and extending 14 ft. staff. All in good condition. Box 92, c/o Secretary, R.I.B.A.

ACCOMMODATION

Members can offer office accommodation, London, S.W.1 district. Normal facilities available. Suitable for country practice requiring London address. Box 87, c/o Secretary, R.I.B.A.

Two Associates having recently commenced practice in London wish to have use of one room in existing office with use of telephone and part-time typewriting facilities, if available, Oxford Circus, Victoria or Charing Cross area preferred. Box 95, c/o Secretary, R.I.B.A.

Two members working together require office accommodation in London, 3 rooms about 150 ft. super each. Box 91, c/o Secretary, R.I.B.A.

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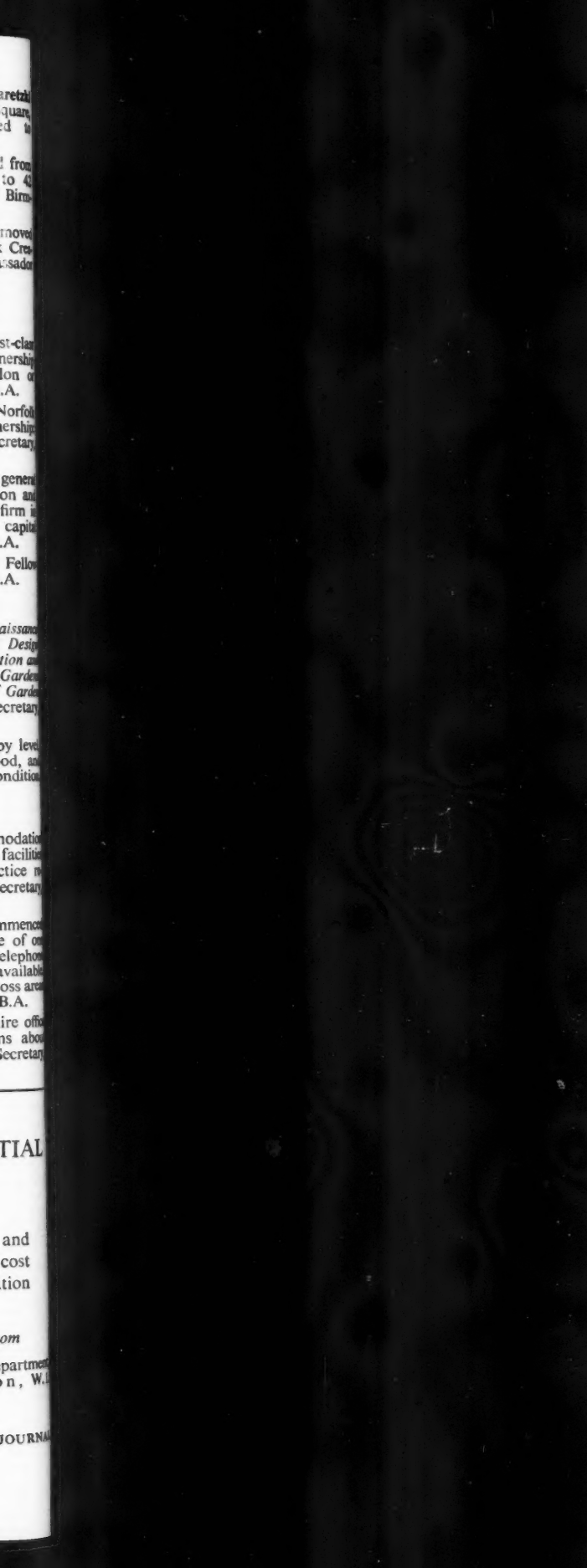
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